

## At last, science can help you answer the compelling questions: Who am I? Where does my genetic path begin?

GPS Origins™ will uncover your ancestry, specifically the journey of your DNA which shaped who you are today.

Learn about the distinct genetic communities that share your origins, the routes your DNA traveled, and why it settled in particular places. Your DNA reflects exciting events throughout evolutionary history!

GPS Origins unique algorithm, developed by Dr Eran Elhaik and his team at the University of Sheffield, identifies with unprecedented accuracy where and when the key parts of your genetic makeup were formed.

Let's begin your journey...

## HUMAN ORIGINS : OUR SHARED HISTORY TO YOUR STORY

The questions of who we are and where we come from have been asked for throughout our history. Once we explained our origins with mythology and folklore but now we utilize modern science to answer them.

Genetics help us tell the story of our origins from the beginning, through the formation of the human gene pools and to the last 2000 years of history.

The test results you have just received, along with the following information, will help you understand your personal story, from the shared history of all humans to your unique family story.

### From Sea to Land: Our Shared History

Our origins lie far beyond the first appearance of humans, with an evolutionary story common to many forms of life on earth. About 360 million years ago fish-like creatures ventured out of the Devonian Sea and became the first reptiles. After hundreds of millions years of evolution the mammals emerged after the extinction of the dinosaurs 65 million years ago thrust them into the evolutionary spotlight, and allowed them to expand into the world the dinosaurs left vacant.

Our human story really begins with the origin of primates, which split away from the other mammalian groups between 65 and 80 million years ago. It would be at least another 60 million years before the appearance of the species *Ardipithecus*, an ape that evolved from the Old World Monkeys and is regarded as the first fossil human ancestor.

Fossil finds from *Ardipithecus* in Ethiopia date it to between 4 and 6 million years ago.<sup>12</sup> This species could walk on two legs like humans but shared other characteristics with chimpanzees. *Ardipithecus* further developed into a number of lineages found throughout East Africa and South Africa that are known as the Australopithecines.<sup>13</sup>

Over the next 3 million years, many Australopithecine species appeared in Africa but they evolved little; their brains remained roughly the same size as those of chimpanzees and they did not use tools. Around 3 million years ago, the subspecies *Homo habilis*<sup>14</sup> began using stone tools, and by 1.5 million years ago the fire-mastering *Homo erectus* appeared. Fossils reveal that *Homo erectus* had a much bigger brain than its Australopithecine ancestors. This subspecies began spreading across much of Africa, Asia, and the Middle East, while the Australopithecines began to disappear.<sup>15</sup>

Next, a new human subspecies, the Neanderthals, appeared. They evolved from a *Homo erectus* relative outside of Africa and had spread widely throughout Europe and the Middle East 500,000 years ago.<sup>16</sup> Neanderthals had stocky builds and thick limbs and were specially adapted to the Ice Age conditions. There is evidence that Neanderthals buried their dead, a practice once thought exclusive to modern humans,<sup>17,18</sup> which raises questions about the nature of the Neanderthal's genetic contribution to modern humans.<sup>19</sup>

### Africa: The First Modern Humans

It is thought that the ancestor of modern humans is one of the *Homo erectus* relatives, which appeared in East Africa sometime between 100,000 to 200,000 years ago.

Many different ancient human species also evolved outside Africa, and persisted for more than a million years of geologic time. Their fossils have been unearthed in Europe, Southeast Asia, and China. Yet this diversity had all but disappeared by 100,000 years ago, and human fossils became remarkably uniform across the globe.<sup>23</sup>

The theory that has become known as the Out of Africa model began with a study in the late 1980s, investigating small changes in the DNA carried by the mitochondria - the DNA passed down by the mother.<sup>24</sup> The study analyzed DNA changes in the mitochondrial genome, and surmised that all humans diverged from a single ancestor living 200,000 years ago in Africa. While this does not indicate that there was just one mother, or 'African Eve', for all humanity, the results suggested that all humans alive today descended from a single population residing in Africa more recently than any of the previously mentioned early human species.

The Out of Africa model has also been applied to research on the Y chromosome.<sup>25,26</sup> This chromosome is found only in male lineages and passed down through the generations, unchanged for the most part. A recent study estimates that the 'African Adam' lived 208,000 years ago.<sup>27</sup>

## Beyond Africa: Colonizing the Continents

Mitochondrial and Y chromosomal DNA have been our primary tools for deciphering the human story because each person receives only one copy from each parent. Mitochondrial DNA is passed down from the mother and Y chromosomal DNA from the father, allowing scientists to track the ancestry of both the maternal and paternal lines. Perhaps one of the most interesting stories told by the mitochondrial and Y chromosomal DNA is how humans colonized the world.

The earliest human migrants appear to have reached Southern China some 80,000 years ago<sup>28</sup>, and DNA studies suggest they may have interbred with Neanderthals on their way through the Middle East.<sup>29</sup> They then spread to the rest of Asia along a route that probably tracks south of the Himalayas and into East Asia between 50,000 and 60,000 years ago,<sup>30</sup> possibly interbreeding with another subspecies known as the Denisovians.<sup>31</sup>

Archaeological and genetic evidence indicate that modern humans crossed the ocean from Southeast Asia and reached the islands near the tropical Pacific area of Oceania as far back as 50,000 years ago, probably in small water craft.<sup>32</sup> At the same time, populations spread to Europe through Turkey and into Central Asia. Some of these Central Asian migrants subsequently moved westward from the Ural Mountains and may be represented today by the peoples of Northern Europe and of the Baltic region, such as the Sami people.

Climate and geography delayed further migrations of modern humans into other areas of the world. Much of northern Eurasia was extremely cold during the last Ice Age (11,000 to 12,000 years ago) and human populations remained small and isolated. A small group of people from Siberia, however, managed to reach North America around 18,000 years ago<sup>33</sup> by way of a land bridge that existed when sea levels were lower. They moved south, and by 15,000 years ago, began to populate South America.

There were several more migratory waves to the Americas with the most recent being the Inuit, who colonized the Arctic of North America between 4,000 and 6,000 years ago.

Asian migration also continued eastwards to Oceania. The large islands of Oceania that are closest to Asia have been inhabited for at least 30,000 years, while the most isolated islands of Northeastern Oceania remained uninhabited until just 3,500 years ago.<sup>34,35</sup> The people who made the first voyages into this region were Austronesians, a group that emigrated from an area around present day Taiwan and are today known as Polynesians.

But as the last Ice Age came to an end and the climate warmed, a human cultural revolution was about to start, and it began in the Middle East.

## Agriculture and the Growth of Civilization

The transition from hunter-gathering to farming occurred in the Middle East between 10,000 and 12,000 years ago,<sup>36</sup> and between 9,000 and 10,000 years ago in China<sup>37</sup> and parts of the Americas.<sup>38,39</sup> By 5,000 years ago agriculture had facilitated the rise of some of the first large civilizations such as Mesopotamia in West Asia,<sup>40</sup> the Maya in Central America,<sup>41</sup> and the earliest Chinese civilizations along the Yangtze.<sup>42</sup>

Early farming cultures then expanded into new areas. Farmers from the Middle East brought agriculture to Europe and rice farming travelled with groups across East Asia. This expansion was accompanied by a genetic reshuffling as different groups came into contact and reproduced. Such reshuffling has been a continuous process over the last 10,000 years.

Genetic research has played a key role in understanding the migrations that took place during this period. Mitochondrial DNA lineages have been used to confirm and enhance archaeological interpretations such as tracing the ancestry of Norse and Gaelic populations, and Y chromosomal studies have been used to track male lineages in studies of Oceania.

## Genetic Origins (Gene Pools): The Key to Identifying Your Ancestral Communities

As humans traversed the globe and colonized different continents, each group accumulated small differences in their DNA. Most of these differences or mutations occurred in the X-chromosome and autosomal chromosomes that are inherited from both parents and allows us to follow the particular journeys made by each human group.

Some genetic roads diverged, not meeting again until modern times, while others led back to one another as genetically distinct groups. The accumulations of mutations in people from different areas of the world are what allow us today to distinguish various groups from one another.

DNA mutations may have occurred by the custom of marrying within a tribe, class, or social group, creating a group of people who were more similar to one another genetically than they were to their ancestors and neighboring groups - in other words, creating a new gene pool or genetic origin..

It's hard to know exactly how many gene pools there are because every genetic background includes "gene puddles" where small, isolated groups of people married only within their local group, acquiring and maintaining unique mutations over time. At this time, scientists have identified about forty gene pools from all over the world. Over time, some of these gene pools spilled toward each other, particularly those in Eurasia, whereas other pools remained more constant.

## Recent History and the Genetic Melting Pot

As ancient peoples traded, conquered, enslaved and fell in love, they spread their genes, along with their unique mutations, across larger areas at an increasingly rapid pace, interweaving previously distinct parts of the original gene pools. If in the past, human groups diverged from one another and became genetically distinct, populations coming together creating new genetic tapestries out of the original genetic origin. Today, every one of us is the product of these historical genetic exchanges: it is extremely rare to find individuals whose DNA belongs to a single gene pool.

Because the X and autosomal chromosomes contain the accumulated mutations that correspond with different gene pools, they provides a more nuanced picture of historical interactions in the past. Your genetic origin results will show you how your genome is linked to the human story of the populations who lived 60,000-15,000 years ago.

## Empires, Pandemic and More Migration: Your Story in the Modern World

The past 2,000 years of human history have seen the rise and fall of empires that spanned entire continents, such as the Persian, Roman, Mongol, Arab Caliphate and most recently, the British Empire.

The expansion of European empires brought European DNA to many different parts of the world such as Australia, Asia and particularly the Americas, where the intermingling of Europeans and native tribes has led to many central and south Americans having mixed ancestry.

Pandemics, such as the Black Death in Europe and smallpox in the Americas caused widespread devastation. Conquests by Viking raiders reshaped entire cultures and identities. All of these events have left their mark in the DNA of present-day populations.

Countries such as the United States, which have experienced large waves of migration from different areas in the last two hundred years have facilitated the further mixing of many different gene pools.

Between the 17th and 19th centuries, slave trade brought as many as 650,000 Africans to the United States along with nearly 4.5 million Irish people who escaped famine and poverty between 1820 and 1930. Other groups to entered the United States between the mid-19th and early 20th centuries which included about 5 million Germans, over 2 million European jews, 4 million Italians, and up to 300,000 Chinese.

Consequently, these migrations merged gene pools that had, thus far, remained largely separate due to geographical barriers. Many Americans and British now share genetic origins with up to a dozen different gene pools, some of which have diverged more than 60,000 years ago, such as the European and Native American gene pools.

Your GPS Origins results reveal your genetic origins and the journey your DNA has made with end-points recorded each time the DNA has markedly changed through intermarriages.

For example, if you have Scottish ancestry your results could show that you are a descendant of the Viking ancestors who arrived in the Medieval era, but did not mix with Scots and retained their Danish origin. If you are African American, you may learn about connections to the Bantu peoples and the pre-colonial trading kingdoms in West Africa. If you are an Ashkenazic Jew, you might find your path leads to the ancient Ashkenaz in northeastern Turkey.

Ongoing genetic research of archaeological remains could mean that, in the future, you may be able to match your background with a range of individuals - whether that is an ancient Mayan King found in a temple complex in Guatemala, a warrior from a Viking boat burial or a flint-knapping craftsman from Mesolithic Germany. The human story, as told through our genes, is only the beginning.

You are now ready to discover your genetic path.

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# Mario Rossi 's Gene Pool %'s

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## # 1 Fennoscandia 16.4%

Origin: Peaks in the Iceland and Norway and declines in Finland, England, and France

## # 2 Sardinia 16.2%

Origin: Peaks in Sardinia and declines in weaker in Italy, Greece, Albania, and The Balkans

## # 3 Western Siberia 13.3%

Origin: Peaks in Krasnoyarsk Krai and declines towards east Russia

## # 4 Southern France 13%

Origin: Peaks in south France and declines in north France, England, Orkney islands, and Scandinavia

## # 5 Orkney Islands 8.6%

Origin: Peaks in the Orkney islands and declines in England, France, Germany, Belarus, and Poland

## # 6 Tuva 8.3%

Origin: Peaks in south Siberia (Russians: Tuvinian) and declines in North Mongolia

## # 7 Southeastern India 7.5%

Origin: Endemic to south eastern india with residues in Pakistan

## # 8 Basque Country 6.2%

Origin: Peaks in France and Spain Basque regions and declines in Spain, France, and Germany

## # 9 Northwestern Africa 3.6%

Origin: Peaks in Algeria and declines in Morocco and Tunisia

## # 10 The Southern Levant 2.9%

Origin: This gene pool is localized to Israel with residues in Syria

## # 11 Arabia 2.8%

Origin: Peaks in Saudi Arabia and Yemen and declines in Israel, Jordan, Iraq, and Egypt

## # 12 Northern India 0.6%

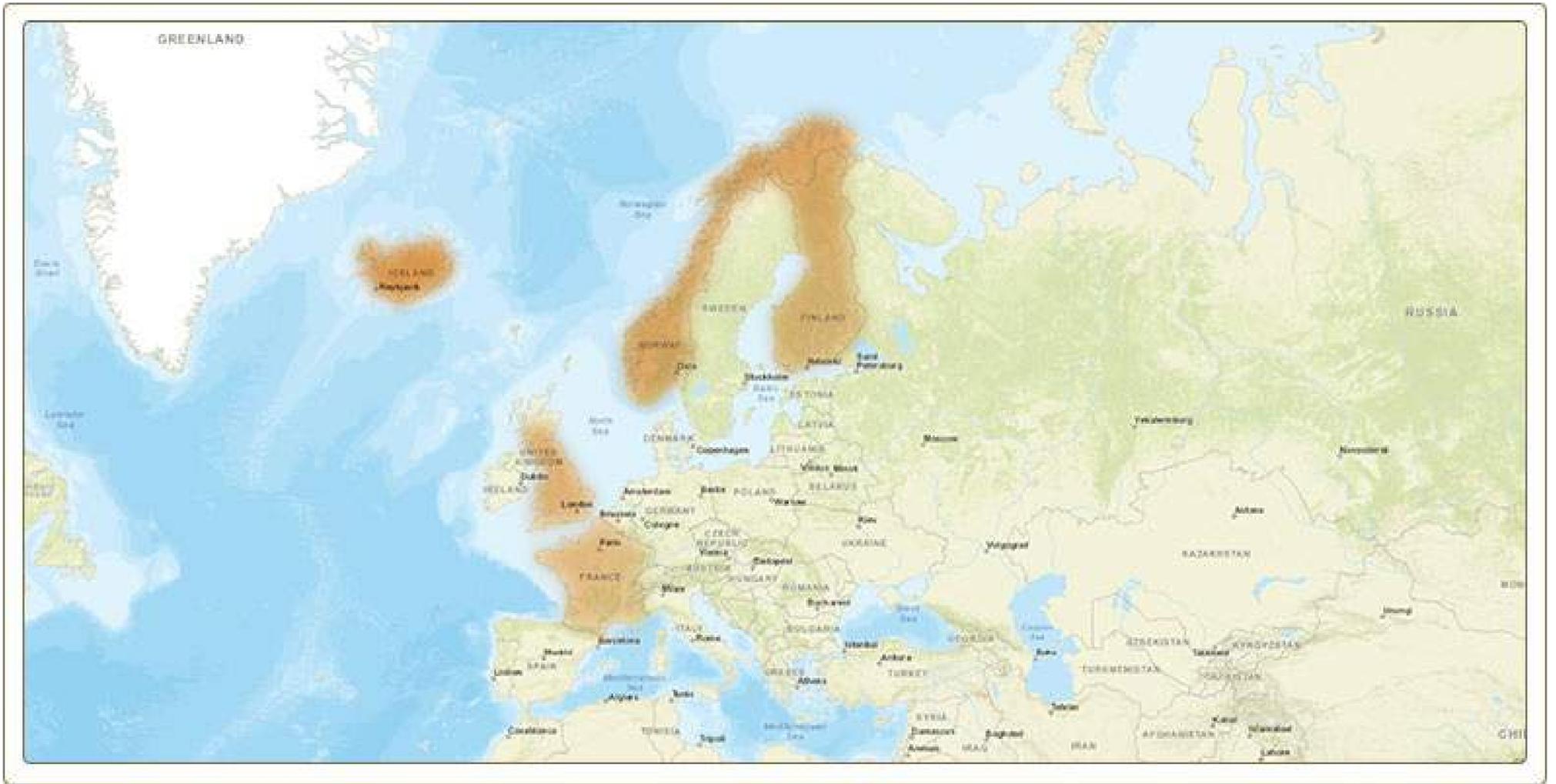
Origin: Peaks in North India (Dharkars, Kanjars) and declines in Pakistan

## # 13 Pima County: The Sonora 0.3%

**Origin:** Peaks in Central-North America and declines towards Greenland and Eskimos

# Mario Rossi 's Gene Pool Stories

## 1.Fennoscandia Story



The area known as Fennoscandia encompasses the countries of Norway, Sweden, Finland, a part of Russia known as the Kola Peninsula. It also included Denmark during the Viking Age, which forms part of greater Scandinavia. The often blonde haired and blue eyed people of this region are known for their intrepid spirit, braving the bitter winters of northern Europe and conquering lands further afield within the continent, even briefly reaching North America.

The retreat of glaciation at the end of the last Ice Age saw the arrival of hunter-gatherers in the north of Europe between 11,000 and 12,000 years ago.<sup>1</sup> The presence of these people is known from archaeological evidence, but where they came from is still unclear and subject to some debate.<sup>2</sup> It is likely they were from similar populations that represent much of the early migration of small hunter-gatherer bands that moved into Europe during the Paleolithic.

Agriculture appeared in Scandinavia between 4,000 and 6,000 years ago.<sup>3-6</sup> Archaeological evidence has shown that this farming culture originated in Central Europe and spread north into Fennoscandia.<sup>7</sup> Similar to other regions in Europe, there has been a considerable debate as to whether this evidence for farming meant that immigrants arrived and pushed out the local ancient hunter-gatherers, or whether farming culture was adopted by the people already living in the area.

Recent genetic studies looking at samples of ancient DNA from preserved bones have found inconsistencies between prehistoric people and later farming populations,<sup>2</sup> suggesting that there may have been replacement of people to some degree. There are two major language groups in Scandinavia, these being the Germanic language of Norway, Sweden, and Denmark, and the Finno-Ugric languages of Finland. The division between the Germanic and Finno-Ugric speaking areas has been used as evidence to support the theory that the Baltic may have been a refugia for earlier hunter-gatherers.<sup>2,8</sup> Analysis of Y-chromosome ancestry from Finno-ugric speakers in Scandinavia and other areas points to a high level of heterogeneity. The potential ancient origins of these people date to 12,000 - 14,000 years ago, when they would have travelled on an ancient Paleolithic migration route that may have gone through Central Asia before turning west to Europe.<sup>9</sup>

The consensus among researchers today is that the genomes of the people of Fennoscandia are of a mixed ancestry, combining ancient hunter-gatherers and more recent Germanic farmers. In areas with more extreme cold climates, there remains more original hunter-gatherer influence, likely due to the marginal nature of farming under such conditions. In Finland, some genetic studies have noted potential historic population crashes as evidence for regional genetic distinctiveness, possibly occurring around 3,900 years ago.<sup>10</sup> Surviving on farming alone was perilous in such an extreme climate and there is evidence for a long coexistence of farming and foraging cultures in Finland.<sup>1</sup>

Between 600 and 700 A.D., social changes in Scandinavia marked the start of a migration event of a different kind, one that saw the cultures of Scandinavia make their mark on the rest of Europe. It is believed that economic and political stress, as well as a rapid period of agricultural expansion led to a desire to seek resources and land further afield, giving birth to the start of the Viking Age.<sup>11</sup> Various small kingdoms and chiefdoms invaded and colonized many countries within Europe. Vikings raided and invaded much of Northern and Western Europe, taking over lands in England, Scotland, and France. They moved east into Russia and moved further west into Iceland, Greenland, and ultimately North America. They briefly settled in what is now Canada's province of Newfoundland.<sup>12,13</sup> They often mixed with the local populations, as shown by the mixed British Celtic and Norse origins of Iceland that have been identified both through historical and genetic research.<sup>14,15</sup>

The age of the Vikings may have ended in medieval times but the movement of people from Scandinavia has continued to the present day. In recent centuries, many have ended up in parts of United States and Canada, often moving into the Midwest, such as Northern Michigan where a distinct Finnish immigrant community has been well established.<sup>16</sup>

In the future, we can envision genetic tests that will be able to distinguish between the ancient hunter-gatherer and more recent Germanic farming components. There may also be tests that can link individuals back to ancient DNA extracted from archaeological skeletal material. What may also prove fascinating for historical enthusiasts is the possibility of future tests that are able to distinguish specific migrations of Viking settlers to different areas of Europe.

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## 2.Sardinia Story



For many years the island of Sardinia has fascinated geneticists and anthropologists due to its long history of genetic and geographic isolation. While the people of this island are associated with having a characteristically Mediterranean appearance, such as dark hair and eyes, and olive colored skin, they have a unique history within the Mediterranean region. Natural barriers and the effects of diseases such as Malaria<sup>1</sup> have led to the development of separated communities within the island.<sup>2</sup> These communities have become identifiable from each other not only by differences in cultural practices but also by genetic studies.<sup>3-5</sup> Sardinia is of particularly fascinating for scientists interested in heritable disease risk,<sup>6</sup> since the genetic constraints caused by the small founding population prior to the advent of farming, known as the Neolithic, may have led to the observed high rates of multiple sclerosis among Sardinians today.<sup>7</sup>

Evidence for human habitation in Sardinia extends back to the middle Paleolithic, with a stone tool culture distinct from neighboring regions appearing by 15,000 years ago.<sup>8</sup> Deer hunting was a major part of the Paleolithic subsistence strategy.<sup>9,10</sup> The arrival of farming is associated with a rise in population. Complex civilization developed during the Bronze Age between 3,000 and 4,000 years ago, and fortified towers known as Nuraghe began to be built.<sup>11</sup> Bronze Age Sardinia traded within a network of ancient societies centered in the Central and Eastern Mediterranean.

Between 2,700 and 2,800 years ago, the Phoenicians of the Eastern Mediterranean brought Sardinia within their trading empire, marking the island's first appearance in historical records. Later, Carthaginians disrupted Phoenician influence and asserted control over all Sardinian trade. There remained, however, little evidence for major migration into Sardinia except for a potential small number of Carthaginian elites.<sup>12</sup> This period of comparative stability under Carthaginian influence lasted until the Punic Wars in the 3<sup>rd</sup> century B.C., which brought the island under direct control of Rome. This led to a political process that turned the island into a Roman province.<sup>13</sup>

When the Roman Empire split into western and eastern sections, the eastern portion was reformed as a new political entity known as the Byzantine Empire which included Sardinia. The Byzantines faced threats from the Arabs to the south as well as other external raiding groups coming from other areas within Europe. Arab raids on the island that occurred between 807 and 813 A.D. caused significant disruption of economic activity in Sardinia, although there was no substantive colonization of the island by these invaders. The island became isolated during this period of instability.<sup>12</sup>

Between the 8<sup>th</sup> and 10<sup>th</sup> centuries, Sardinia became increasingly autonomous and a local system known as the Giudicati, or literally ‘judges,’ developed on the island. In subsequent centuries there was an increasing frequency of interactions with Italy and papal influences, resulting in the establishment of monastic orders. Rivalry among the Italian states of Pisa, Genoa and the Catalonian Crown of Aragon led to the formation of a Kingdom of Sardinia. After this period, the Kingdom of Sardinia was incorporated into the unified Italian state, where it remains to the present day.<sup>14</sup> Sardinians began to migrate off the islands to the Americas during the late 19<sup>th</sup> and early 20<sup>th</sup> centuries, particularly to South America, but many went to the United States as well.<sup>15</sup>

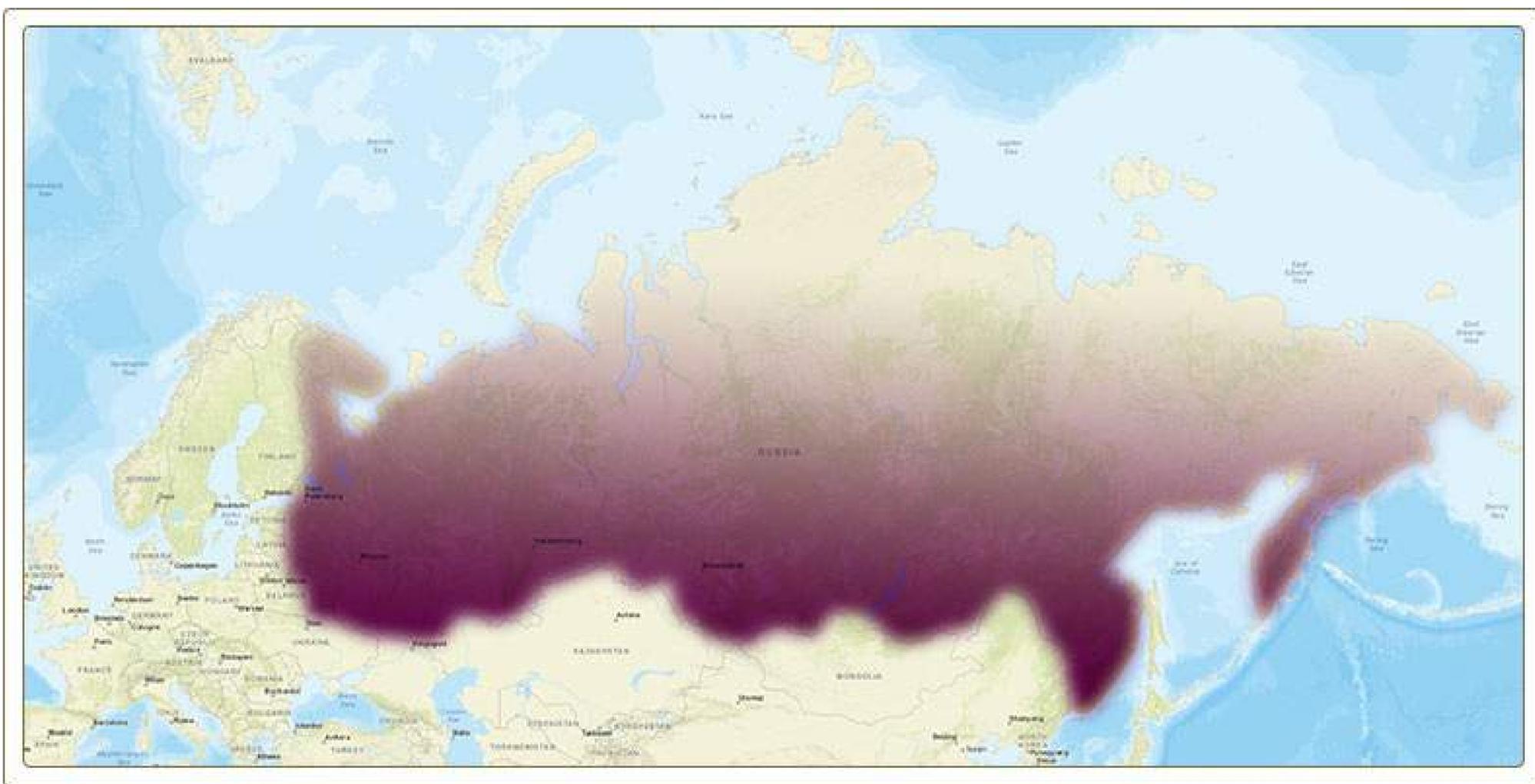
Sardinia is unique within Europe in that there has been relatively little documented migration to the island from surrounding areas since the beginning of the Bronze Age. Despite such genetic isolation, Sardinia has a long history of interaction with its Mediterranean neighbors in terms of both trade and political union, particularly Italy and the Eastern Mediterranean. This has made the region extremely attractive for geneticists, and many studies have looked at the various populations on the island.

Future genetic tests may be able to place an individual’s ancestry within the many distinct parts of the island. In the future, genetic tests may be able to detect fine-tuned Eastern Mediterranean genetic components, which could be linked back to ancient trade with Phoenicians, Greeks, and Romans. It may also be possible to find evidence of genetic input from Arabic raiders from coastal areas.

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### 3. Western Siberia Story



Siberia's vast, open landscape set the stage for the movement of people and cultures to multiple regions of the Eurasian continent: both to the south and into what is now China, east into North America, and west into Europe. The people of Siberia today are divided between different regional ethnic and linguistic groups. The people of Eastern Siberia are more closely related to Mongolians and the Tungusic tribes of Northeast China, such as the Manchu, while Western Siberians are made up of small, former nomadic tribes such as the Ket and the Selkup.<sup>1</sup> The people of Western Siberia could be described as having mixed Eurasian characteristics. However, it is likely these people have their own, unique ancestry that goes back just as far as the earliest migrations of humans into other areas of Eurasia.

The harsh and arid conditions of Siberia have meant that population densities have always remained low with nomadic foraging being the predominant subsistence-pattern for most of the region's history.<sup>2</sup> The region is particularly known for reindeer breeding. Whereas agricultural innovations have led to substantive displacement, colonization, and mixing of Paleolithic groups in other areas of the world, far less intermixing has occurred in the steppes of Western Siberia. This has attracted the attention of geneticists attempting to determine who were the original Paleolithic peoples that migrated through Siberia.<sup>3,4</sup>

Precisely how the earliest inhabitants of Siberia arrived in the region remains unclear and is still subject to debate, with routes up through China and Mongolia commonly proposed, but also some from further west toward Europe.<sup>5,6</sup> The earliest dated archaeological evidence for human habitation has been found in the Altai Mountains dating to 45,000 years ago.<sup>7,8</sup> Many of the early groups maintained nomadic subsistence patterns well into the 20<sup>th</sup> century. Much research has gone into identifying them through their linguistic heritage. The two major linguistic groups are the Samoyedic and Ugrian languages. Speakers of Samoyedic language include the Nenets, Enets, Nganasan, and the Selkup, while Ugrian includes Khanty and Mansi.<sup>1,9</sup> These two linguistic groups are thought to be related. Studies of Y-chromosome and mitochondrial DNA lineages have related the Khanty and Mansi to both west and east Eurasian gene pools.<sup>10</sup>

There is another small group that lives in the region known as the Kets, who number fewer than 1,000 people today. They speak an Eastern Siberian language known as Yeniseian, which is related to Yukaghir, Nivkh, and Chukotko-Kamchatkan.<sup>1</sup> It is believed that at one time these people were more

widespread within Western Siberia and may have arrived in the area prior to Samoyedic and Uralic peoples. Their language may be related to those found among some Native American groups such as the Athabascan, which provides a link to the people of the Americas.<sup>11</sup> Native Americans are thought to be directly related to eastern Siberians and some Y-chromosome studies have found that the Kets share more in common with nearby Samoyedic and Ugric groups.<sup>5</sup> However, recent mitochondrial and Y-chromosome DNA studies of related Altai mountain peoples, focusing on both Tungusic and Yeniseian speakers, have also reestablished a possible link with Native Americans.<sup>12</sup> This leaves open the possibility of an ancient connection, although more recent mixing between Yeniseians and Samoyedic and/or Ugric peoples has made this picture unclear.

The Russians arrived and colonized Siberia between the 17<sup>th</sup> and 19<sup>th</sup> centuries. This involved significant Russian migration into Siberia. Farming and resource extraction became a major economic focus of the Russian state in the 20<sup>th</sup> century.<sup>13</sup> While most of the people who live in Siberia arrived through recent colonial migration, there has been very little intermixing between indigenous groups and Russian settlers. This period also involved the relocation of native groups and disturbance of traditional ethnic boundaries.

Future testing may be able to determine ancestry attributed to a specific Western Siberian peoples. There are also many further possibilities of tracing very ancient migration routes such as those that went west into Eastern Europe and those that went into North America. There may also be an ancestry test for the proportion of ancient Siberian DNA a person has and their relationship with Native Americans. Tests that assess one's connection with specific linguistic groups may also be possible.

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# Mario Rossi's DNA Migration Routes



## Migration Story A

Date: 975 AD - 1531 AD

Radius: 17.9101miles

Latitude: 38.383

Longitude: 23.101

## Ancient ancestry in Greece

Your ancestors came from Greece prior to 721 AD, so let's take a look at what was going on in Greece up to this point:

### The Macedonian Kingdom

Between 323 BC and 146 BC, Greece was ruled by local leaders in a period known as the Hellenistic period. Greek power was at its height under Alexander the Great, but after his death it was divided into the Ptolemaic Kingdom, the Seleucid Empire and the Macedonian Kingdom. The Greek city-states had a degree of autonomy, but king Philip V failed to unite them against the threat of Rome. By 146 BC, after the First and Second Macedonian Wars, Rome had conquered Greece, made Philip its ally and granted the city-states nominal freedom. At the same time, populations moved from Greece to places like the Balkan peninsula, Eastern Europe, and the Middle East and Italy during the conquests of Alexander the Great and the subsequent emigration of Greeks across the empire and Europe for trade and colonization activities.

### Roman Greece

Between 145 BC and 330 AD, Greece was ruled by local leaders in a period known as Roman Greece. After the Battle of Corinth, Greece became part of the Roman Empire. Some Greek city-states managed to maintain independence and avoid taxation and the Romans did not replace pre-existing Grecian political and administrative systems. Under Roman rule Greek arts, education and culture continued to flourish and in 212 AD the Roman Empire granted citizenship to all adult men in the Roman world. People migrated from Italy, Albania, Cyprus, Macedonia, Georgia, Bulgaria, and Kosovo and movement around the former Greek Empire to Greece as a result of Roman invasion. At the same time, populations moved from Greece to places like Turkey, Armenia, Albania, and Cyprus and across the Byzantine Empire as Greeks spread widely and were especially respected as teachers and doctors by the Byzantines.

## Greece Suffers under the Byzantines

Between 331 AD and 726 AD, Greece was ruled by local leaders in a period known as the Early Byzantine period. The newly Christian Orthodox Greece and the Byzantine Empire prospered as the Roman Empire declined until, in 364 they split. Greece entered a period of prosperity and progressive reform but from the 4th century onwards, was raided by various tribes including Goths, Vandals, Huns, Slavs and Bulgars. Despite improving fortifications, the Byzantine emperors struggled to keep settlers out of the Greek Peninsular and Greece suffered extensive economic damage. People migrated from Romania, Ukraine, Moldova, Bulgaria, and Turkey and other Byzantine countries to Greece due to the immigration and settlement of Slavic people across Greece and the resettlement of Greek-speaking people from Asia Minor to the Greek peninsula. Skilled laborers, traders and artists moved around the Byzantine Empire looking for work. Bulgars were encouraged to settle across Greece by the Byzantine Emperor. At the same time, populations moved from Greece to places like Kosovo, Macedonia, Montenegro, Albania, and Italy and the Balkan states in response to the expulsion of Slavic people from many Balkans country leaving vacant land and opportunities. The Byzantines frequently moved Greeks around the Empire, as teachers, slaves, soldiers and farmers.

## Movement from Greece to Macedonia

At some point before 721 AD your ancestors moved to Macedonia. These are the events your ancestors would have lived through in Macedonia.

## The Roman Defeat of the Kingdom of Macedonia

Between 146 BC and 394 AD, Macedonia was ruled by local leaders in a period known as the Roman era. In 146 BC the Romans defeated the Kingdom of Macedonia and established the province of Macedonia, a large administrative region incorporating parts of Albania, Bulgaria and Greece. Roman rule brought with it economic prosperity, improved infrastructure and modernized administration as well as a tide of educated and skilled immigrants from around the Roman Empire. People migrated from Greece, Bulgaria, Albania, and Italy and Kosovo to Macedonia seeking trade and labor opportunities. Many Greeks worked in Macedonia as doctors and tutors. At the same time, populations moved from Macedonia to places like Greece, Bulgaria, and Albania and countries around the Roman Empire as people migrated around the Roman world looking for better opportunities, a chance to acquire land or trade.

## Byzantine Macedonia

Between 395 AD and 862 AD, Macedonia was ruled by local leaders in a period known as the Byzantine era. After the split of the Roman Empire, the province of Macedonia fell within the Byzantine sphere was further influenced by Greek culture. From the 6th century onwards, Macedonia saw frequent waves of raiding Slavs, Bulgars and Avars and by 680 a group of southern Slavs led by Khan Kuber had settled in Macedonia. This prompted a huge military retaliation from the Byzantines who relocated many Slavs to Turkey. People migrated from Turkey, Greece, Kazakhstan, Ukraine, Romania, Eastern Europe, and Central Asia and around the Byzantine Empire to Macedonia as waves of Slavic tribes, Bulgars and Avars settled across Macedonia. There was also lots of migration around the Byzantine Empire because of trade, slavery and other opportunities. At the same time, populations moved from Macedonia to places like Turkey and Armenia as part of the relocation of 110,000 Slavs to Turkey under the Byzantine Emperor Justinian I.

## Movement from Macedonia to around Greece

At some point after 721 AD your ancestors moved to around Greece and once they reached there this is what they would have experienced:

## The Macedonian Kingdom

Between 323 BC and 146 BC, Greece was ruled by local leaders in a period known as the Hellenistic period. Greek power was at its height under Alexander the Great, but after his death it was divided into the Ptolemaic Kingdom, the Seleucid Empire and the Macedonian Kingdom. The Greek city-states had a degree of autonomy, but king Philip V failed to unite them against the threat of Rome. By 146 BC, after the First and Second Macedonian Wars, Rome had conquered Greece, made Philip its ally and granted the city-states nominal freedom. At the same time, populations moved from Greece to places like the Balkan peninsula, Eastern Europe, and the Middle East and Italy during the conquests of Alexander the Great and the subsequent emigration of Greeks across the empire and Europe for trade and colonization activities.

## Roman Greece

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as Greeks spread widely and were especially respected as teachers and doctors by the Byzantines.

## Greece Suffers under the Byzantines

Between 331 AD and 726 AD, Greece was ruled by local leaders in a period known as the Early Byzantine period. The newly Christian Orthodox Greece and the Byzantine Empire prospered as the Roman Empire declined until, in 364 they split. Greece entered a period of prosperity and progressive reform but from the 4th century onwards, was raided by various tribes including Goths, Vandals, Huns, Slavs and Bulgars. Despite improving fortifications, the Byzantine emperors struggled to keep settlers out of the Greek Peninsular and Greece suffered extensive economic damage. People migrated from Romania, Ukraine, Moldova, Bulgaria, and Turkey and other Byzantine countries to Greece due to the immigration and settlement of Slavic people across Greece and the resettlement of Greek-speaking people from Asia Minor to the Greek peninsula. Skilled laborers, traders and artists moved around the Byzantine Empire looking for work. Bulgars were encouraged to settle across Greece by the Byzantine Emperor. At the same time, populations moved from Greece to places like Kosovo, Macedonia, Montenegro, Albania, and Italy and the Balkan states in response to the expulsion of Slavic people from many Balkans country leaving vacant land and opportunities. The Byzantines frequently moved Greeks around the Empire, as teachers, slaves, soldiers and farmers.

## Migration Story B

Date: -864 BC - 513 AD

Radius: 158miles

Latitude: 39.186

Longitude: 2.981

## Ancient ancestry in around Algeria

Your ancestors came from around Algeria prior to 732 BC, so let's take a look at what was going on in Algeria shortly after this time:

### The Roman Empire Annexes Algeria

Between 201 BC and 300 AD, Algeria was ruled by local leaders in a period known as Roman Numidia. During this period Berber territory was annexed by the Roman Empire in 24 AD. Increased urbanization and land cultivation resulted in the dislocation of Berber society and great opposition to the Romans. In the 2nd century AD, Christianity arrived in Algeria and conversions were completed by the 4th century. People migrated from Italy to Algeria in order to expand territories and land-grab. At the same time, populations moved from Algeria to places like Italy with movement around the Roman Empire.

## Movement from around Algeria to Spain

At some point before 732 BC your ancestors moved to Spain. These are the events your ancestors would have lived through in Spain shortly afterwards.

### The Defeat of the Celtiberians

Between 181 BC and 19 BC, Spain was ruled by local leaders in a period known as the Roman Conquest. From 181 BC the Celtiberian tribes inhabiting the majority of modern-day Spain, tried to stop the advancing Roman legions in a series of conflicts known as the Celtiberian Wars. However, they were unsuccessful and the Roman conquest of the country was completed in 19 BC. People migrated from Italy to Spain with the Roman invasion of Spain.

## Movement from around Algeria to Spain

At some point before 732 BC your ancestors moved to Spain. These are the events your ancestors would have lived through in Spain shortly afterwards.

### The Defeat of the Celtiberians

Between 181 BC and 19 BC, Spain was ruled by local leaders in a period known as the Roman Conquest. From 181 BC the Celtiberian tribes inhabiting the majority of modern-day Spain, tried to stop the advancing Roman legions in a series of conflicts known as the Celtiberian Wars. However, they were unsuccessful and the Roman conquest of the country was completed in 19 BC. People migrated from Italy to Spain with the Roman invasion of Spain.