



## Carlo Lamanna's Results

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**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

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 provide 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 enter 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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# Carlo Lamanna's Gene Pool %'s Complete Results

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## # 1 Sardinia 20.3%

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

## # 2 Fennoscandia 13.7%

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

## # 3 Southern France 10.8%

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

## # 4 Western Siberia 10.4%

Origin: Peaks in Krasnoyarsk Krai and declines towards east Russia

## # 5 Southeastern India 9.7%

Origin: Endemic to south eastern india with residues in Pakistan

## # 6 Orkney Islands 7.3%

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

## # 7 Basque Country 6.8%

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

## # 8 Arabia 6.7%

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

## # 9 Tuva 5.7%

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

## # 10 The Southern Levant 3.5%

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

## # 11 Northwestern Africa 3.3%

Origin: Peaks in Algeria and declines in Morocco and Tunisia

## # 12 Northern India 0.7%

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

## # 13 Western South America 0.7%

Origin: Peaks in Peru, Mexico, and North America and declines in Eastern Russia

## # 14 West Africa 0.4%

Origin: Peaks in Senegal and Gambia and declines in Algeria and Mororrco

# Carlo Lamanna's Gene Pool Stories

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## 1.Sardinia Story



For many years the island of Sardinia has fascinated geneticists and anthropologists because of its long history of genetic and geographic isolation. While the people of this island are associated with a characteristically Mediterranean appearance, such as dark hair and eyes, and olive 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 particular fascination for scientists interested in heritable disease risk,<sup>6</sup> as the genetic constraints caused by the small founding population (prior to the advent of farming in the Neolithic period) may have led to high rates of multiple sclerosis amongst Sardinians today.<sup>7</sup>

Evidence for human habitation in Sardinia extends back to the middle Paleolithic period. A stone tool culture that was distinct from neighboring regions had appeared by 15,000 years ago.<sup>8</sup> Deer hunting was a

major part of Paleolithic subsistence.<sup>9,10</sup> The arrival of farming is associated with a subsequent 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 that was centered in the Central and Eastern Mediterranean.

Between 2,700 and 2,800 years ago, the Phoenecians of the Eastern Mediterranean brought Sardinia within their trading empire, marking the island's first appearance in historical records. Later, Carthaginians disrupted the Greco-Roman influence and asserted control over all Sardinian trade. There remained, however, little evidence for major migration into Sardinia except for a small number of Carthaginian elites.<sup>12</sup> This period of comparative stability under Carthaginian influence lasted until the Punic Wars in the 3rd century BC, 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, in which Sardinia was included. 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 AD 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 8th and 10th centuries, Sardinia became increasingly autonomous and a local system known as the Giudicati or '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 subsumed into the unified Italian state in which it remains to the present day.<sup>14</sup> Sardinians began to migrate from the islands to the Americas during the late 19th and early 20th centuries to both South America and the United States.<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.

Recent genetic investigations described Sardinians in the central-southern and mountain areas as a heterogeneous population. Today's Sardinians are known to exhibit unique genetic signatures that indicate their village of origin.<sup>16</sup>

Future genetic tests may be able to place an individual's ancestry within the many distinct parts of the island. For example, these genetic tests may be able to link Eastern Mediterraneans to ancient trade with Phoenicians, Greeks, and Romans or Arabic raiders from coastal areas.

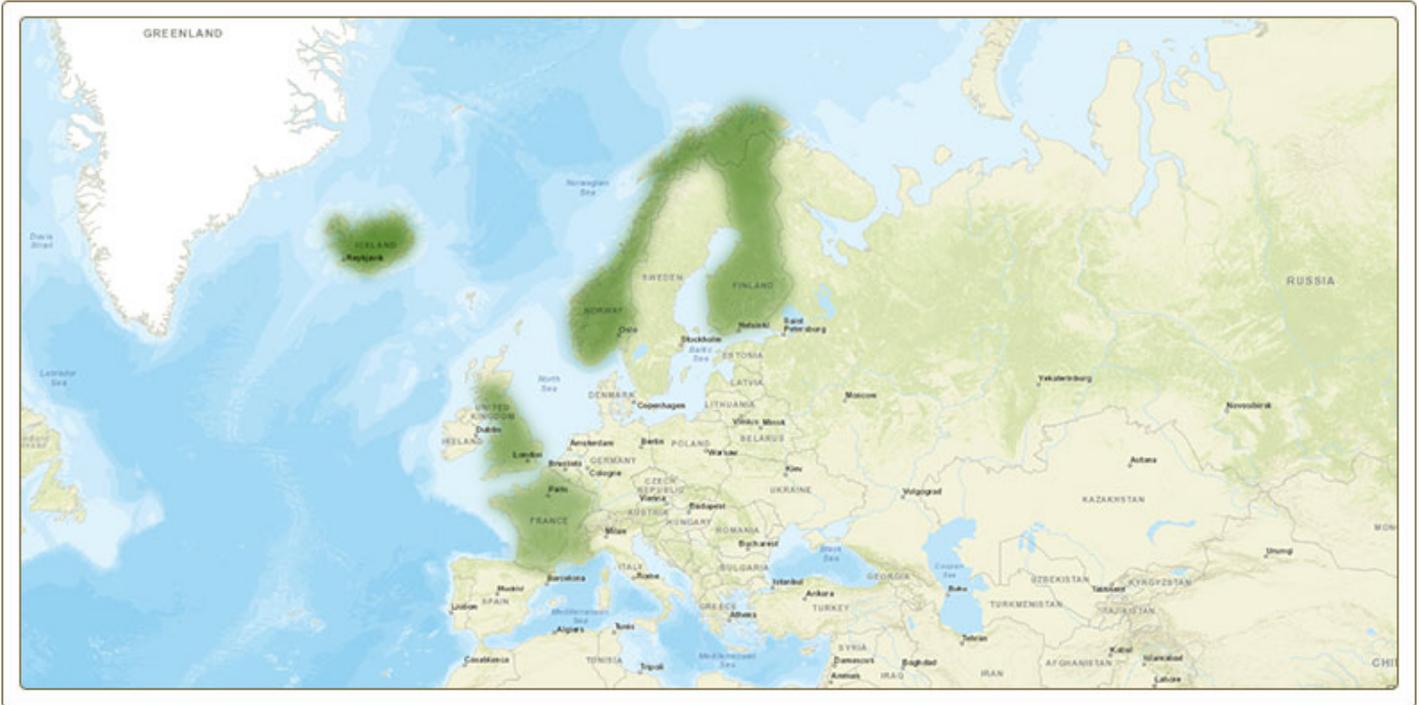
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## 2.Fennoscandia Story



The area known as Fennoscandia encompasses the countries of Norway, Sweden, Finland, and a part of Russia known as the Kola Peninsula. It also included Denmark during the Viking Age, which forms part of greater Scandinavia. The people of this region are known for their extensive voyages, which took them beyond the bitter winters of northern Europe to conquer lands further afield within the continent, and even briefly to North America.

At the end of the last Ice Age, the glaciers retreated and hunter-gatherers arrived in northern Europe between 11,000 and 12,000 years ago.<sup>1</sup> The presence of hunter-gatherers is known from archaeological evidence and likely came from populations similar to the early, small bands of hunter-gatherers that moved into Europe during the Paleolithic period.

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 differences between prehistoric people and later farming populations,<sup>2</sup> suggesting that immigrants may have replaced the locals. There are two major language groups in Scandinavia: 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 region may have been a refuge for earlier hunter-gatherers.<sup>2,8</sup> Analysis of Y-chromosome ancestry from Finno-ugric speakers in Scandinavia and areas in north Eurasia points to a high level of diversity. The potential ancient origins of these people dates from 12,000 to 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, which is a combination of 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 about 3,900 years ago.<sup>10</sup> Surviving on farming alone was very difficult in such an extreme climate and there is evidence that farming and foraging cultures coexisted in Finland.<sup>1</sup>

Between 600 and 700 AD, social changes in Scandinavia marked the start of a migration event that saw the cultures of Scandinavia make their mark on the rest of Europe. It is thought that economic and political stress, as well as a rapid period of agricultural expansion, led people to seek resources and land further afield, catalyzing 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 further to the 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 in 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>

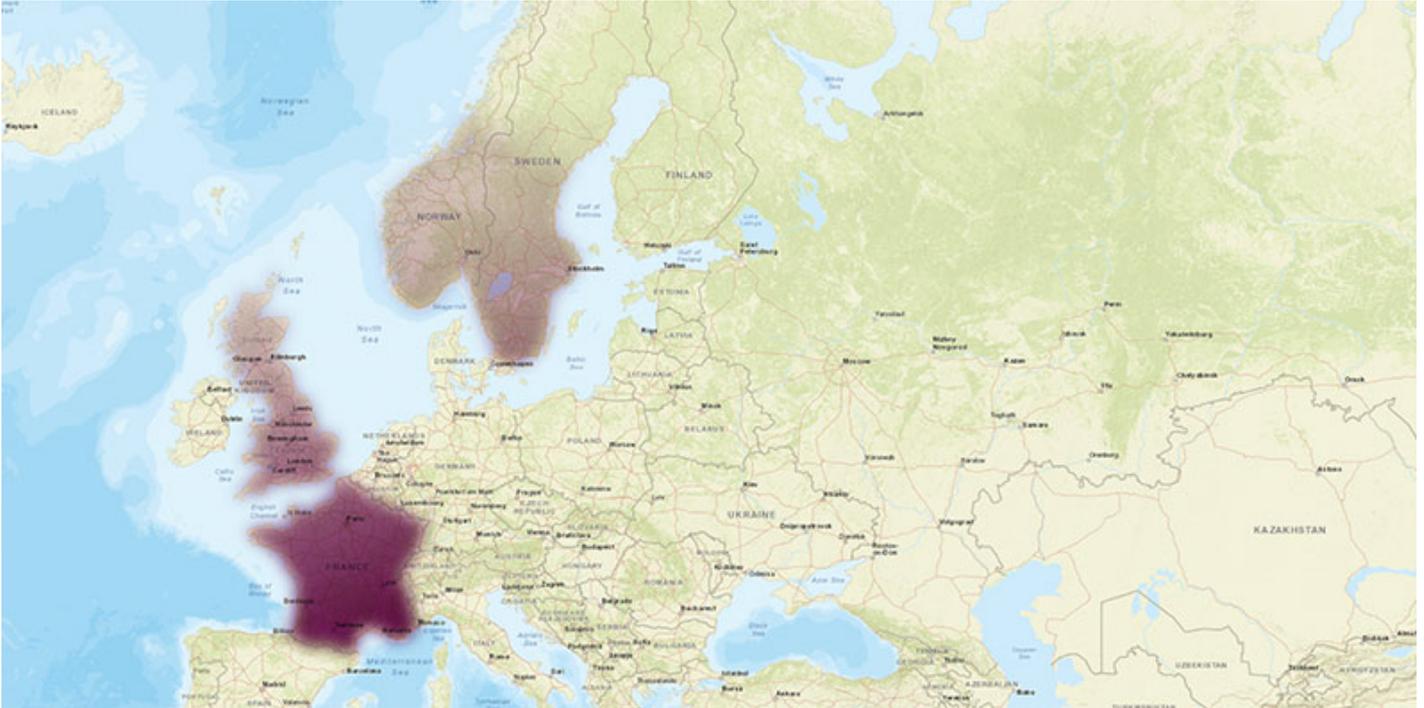
Viking migration ended in the medieval era but the movement of people from Scandinavia has continued to the present day. In recent centuries there have been migrations to parts of the United States and Canada, with people often moving into the Mid-West, for example to Northern Michigan, where a distinct Finnish immigrant community is 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 tests in the future that are able to distinguish specific migrations of Viking settlers to different areas of Europe.

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### 3.Southern France Story



Southern France was a major crossroads of Europe with multiple waves of human migration. The people of Southern France today appear to share many common features in appearance with their Mediterranean neighbors. At the same time, the region's position within Europe to the west of the Alps made it easier for people to move between north and south.

Southern France and much of the surrounding area was inhabited by Neanderthals during the Paleolithic era, who became extinct upon the arrival of modern humans between 35,000 to 50,000 years ago.<sup>1</sup> The area was situated at the edge of the Paleolithic ice sheets and was a refuge for people pushed back by worsening climate conditions further north, creating constant movement in and out of the region. The earliest modern humans that arrived in Southern France were Ice Age hunter-gatherers. These people are famous for producing some of the earliest cave paintings known to exist - in the limestone caves of the Pyrenees.<sup>2</sup>

Hunter-gatherer migration persisted for thousands of years and population density remained low. The development of agriculture in the Middle East and its spread into Europe - which started about 12,000 years ago<sup>3</sup> - brought major changes to the region, as large-scale migration of people occurred along the southern corridor of the Alps. These people brought with them their languages, which are believed to be part of the Indo-European language family which exists all over Europe today.<sup>4,5</sup> Nearly all of the currently spoken languages in Europe are thought to relate to this expansion of early farmers. In Southern Europe, this migration south of the Alps links the Latin languages of Italy, Spain, and France, while Germanic languages are found north of the Alps.<sup>6</sup> This suggests that the early farming cultures that arrived in France came through the south and proceeded north.

A Bronze Age culture developed by 1000 BC,<sup>7,8</sup> with settlements throughout Southern France. Over the next thousand years, Iron Age societies began to appear throughout all of France, and became unified as a culture known as the Celts.<sup>9</sup> These Celtic societies formed strong links throughout France and into other parts of Northern Europe. These societies were eventually overwhelmed by the Romans who conquered all of present day France, turning it into the Roman province of Gaul.<sup>10</sup> After the breakup of the Roman Empire, the southern area of France has generally remained within the borders of the Kingdom of France, with economic practices firmly rooted in the cultures of the Mediterranean.

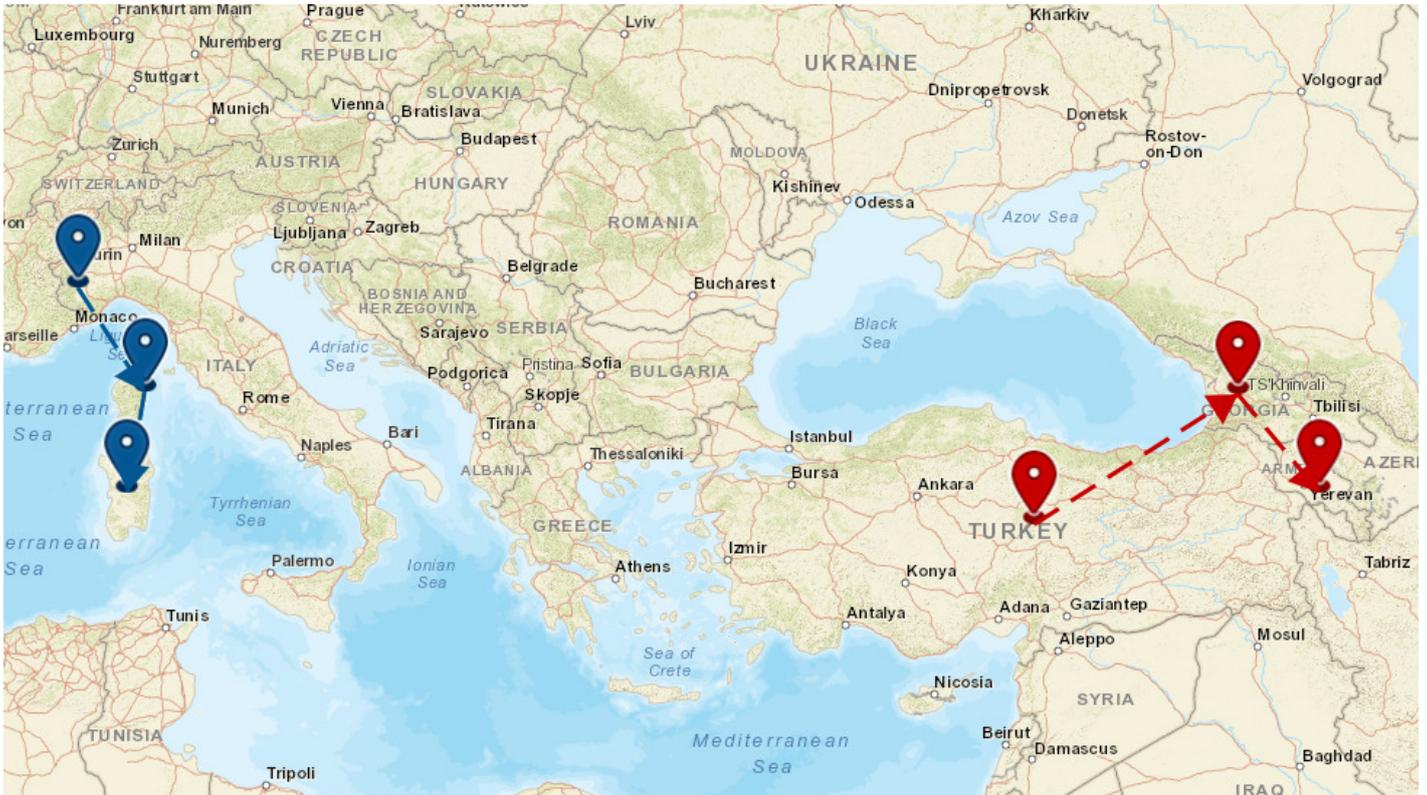
The diversity of languages in the region may hint at populations that were ethnically and culturally distinct from one another. Catalan, Aragonese, and Gascon are Indo-European languages related to the French that are spoken in other areas of the Pyrenees today.<sup>11</sup> Aragonese and Gascon have been in decline in recent centuries. While it may not be possible to link these populations back to the earliest societies in the area, they do provide some grounds for investigating local genetic ancestry.

Future genetic testing may be able to distinguish between early hunter-gatherer influences and later agriculturalists. There have been some studies that have found links between Southern France and its Mediterranean neighbors.<sup>12</sup> Research has also found genetic contributions from other Semitic and North African migration events. In the future, we may be able to distinguish these genes as well. It may also be possible to determine which specific Southern France groups (Catalan, Aragonese, or Gascon) an individual may be related to and what languages their ancestors used to speak.

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# Carlo Lamanna's DNA Migration Routes



## Migration Story A

Date: 663 AD - 1376 AD

Radius: 134.7787miles

Latitude: 39.271

Longitude: 36.385

### Ancient ancestry in Turkey

Your ancestors came from Turkey prior to 1037 AD, so let's take a look at what was going on in Turkey up to this point:

#### *Byzantine Turkey*

Between 395 AD and 601 AD, Turkey was ruled by local leaders in a period known as the Late Roman era. In 395 the Roman Empire was divided and Constantinople (Istanbul) became the capital of the Eastern Byzantine Empire. This Christian empire went on to rule for over a millennium. In 532, the politically motivated Nika Riots saw a great fire break out in the capital, killing many people and destroying much of the city. This period also saw near constant warfare with the Persian Ssnians who ruled much of Anatolia. People migrated from Sweden, Poland, Kazakhstan, and around the Byzantine Empire and Central Asia to Turkey as people moved around the Byzantine Empire looking for opportunities. Vandals (originally from Sweden but then found in Poland), Bulgars and other Turkic tribes from Central Asia were settled in Asia

Minor by Justinian I, the Byzantine emperor, to gain a political advantage. Iranians who deserted the Persian army were welcomed into the Byzantine forces. At the same time, populations moved from Turkey to places like Greece, Cyprus, Bulgaria, Syria, Armenia, Egypt, Iraq, and Iran and across the Byzantine Empire as Turkish people moved around the Byzantine Empire, often taking on positions of authority, and the Byzantines continued to launch attacks against the Persian Ssnians.

### ***The Conflict Between the Byzantines and the Arabic Caliphate***

Between 602 AD and 1015 AD, Turkey was ruled by local leaders in a period known as the Middle Byzantine era. From the 7th century the Byzantine Empire began to decline in size and influence, weakened by external threats and internal instability. In 627 the Persians were forced out of Turkey, but were rapidly replaced by the Muslim Arabic Caliphate who engaged the Byzantines in four centuries of war. The Byzantines also faced Slavic Bulgars in the west, and Kievan Rus' in the north. The rift between western Rome and the Byzantine Empire deepened with the Iconoclastic Byzantine emperors of the 8th century. People migrated from Greece, Cyprus, Saudi Arabia, Oman, Armenia, Syria, the Balkans, and the Middle East and Central Asia to Turkey for reasons such as movement within the Byzantine Empire, continual Arab migration from the Arabian peninsula, and the continued migration of Turkic tribes from Central Asia. Syrians and Armenians were moved to Turkey during the reign of Constantine V to cultivate new land and Slavs from the Balkas were resettled in Asia Minor. At the same time, populations moved from Turkey to places like Greece, Cyprus, Bulgaria, Syria, Armenia, Egypt, and the Balkan states and other countries in the Byzantine Empire as the Turkish people continued to move across the Byzantine Empire, took up jobs in administration and colonized unoccupied land. Many Turkish Greeks were settled across the Balkans.

### ***The Seljuks, Latin Crusaders and the Mongol Golden Horde***

Between 1016 AD and 1453 AD, Turkey was ruled by local leaders in a period known as the Late Byzantine era. The Byzantines faced a new threat from the Turkic Seljuk Empire, which had united the eastern Islamic world, and whose expansion into the Middle East had sparked the Crusades. Despite a 12th century renaissance in Turkey, with flourishing culture and prosperous trade, subsequent centuries of war against Seljuks, Normans and Hungarians, and invasions by Latin Crusaders, the Mongol Golden Horde and finally the Serbian Empire, irreparably devastated the Byzantine Empire and in 1453 it collapsed and Turkey was conquered by the Ottomans. People migrated from Greece, Armenia, Italy, and Egypt and Central Asia to Turkey due to population resettlements within the Byzantine Empire, the arrival of Italian and Egyptian traders, incursions of the Seljuk Empire and the brief occupations by Latin crusaders, the Mongols and the Serbian Empire. Land destroyed in the crusades was rapidly repopulated, many people transferred to Constantinople from Morea (Southern Greek Peninsula). At the same time, populations moved from Turkey to places like Italy, Romania, Hungary, Poland, Serbia, and Christian Europe and the Balkan states due to the Ottomans' war with the Republic of Venice, raiding of Transylvania, invasion of Serbia and the Crusade of Varna, which saw a series of Ottoman victories over the European crusaders.

## **Migration Story A**

Date: 1481 AD - 1674 AD

Radius: 28.2281miles

Latitude: 42.263

Longitute: 42.542

### **Movement from Turkey to Georgia**

At some point before 1037 AD your ancestors moved to Georgia. These are the events your ancestors would have lived through in Georgia.

### ***The Lazic Wars and the Spread of Christianity***

Between 298 AD and 735 AD, Georgia was ruled by local leaders in a period known as the Byzantine era. The Byzantine Empire and Persian Sassanid Empire fought the Lazic Wars to gain control of Georgia. Most of the country was incorporated into the Byzantine Empire by 562, including the formerly independent Kingdom of Lazica-Egrisi in west Georgia. The Georgian Kingdom of Iberia became one of the first states in the world to convert to Christianity yet frequent bouts of Persian rule meant Zoroastrianism also spread. People migrated from Turkey, Italy, Greece, Algeria, Iran, and Armenia and elsewhere from the Byzantine Empire to Georgia as a result of the Byzantine policy of resettling citizens around the empire to utilize uncultivated land. At the same time, populations moved from Georgia to places like Turkey, Italy, Greece, and Algeria and elsewhere in the Byzantine Empire due to the resettling of Georgian farmers in uncultivated Byzantine areas.

### ***The Muslim Invasion***

Between 736 AD and 1008 AD, Georgia was ruled by local leaders in a period known as the Early Middle Ages. Muslim Arabs of the Abbasid Caliphate conquered Georgia and established their capital in Tbilisi, which underwent extensive Islamization and became a key trade center. However, in 853 an insurgent emir incurred the wrath of the Caliphate who sent an army to burn Tbilisi to the ground. In the 11th century, the Seljuks invaded Georgia. A group of Georgian princes of the Bagrationi Dynasty managed to finally expel the Muslims and liberate Georgia. People migrated from Saudi Arabia, Oman, Yemen, and Iran and Turkey to Georgia as a result of the Arab conquest of Georgia, the settling of Muslims and later, the invasion of the Seljuks Turks. At the same time, populations moved from Georgia to places like Saudi Arabia, Iraq, Iran, and Turkey and other predominantly Islamic countries when many Muslim settlers were expelled from Georgia.

### ***Queen Tamar The Great and the Georgian Golden Age***

Between 1009 AD and 1489 AD, Georgia was ruled by local leaders in a period known as the High Middle Ages. King David the Builder invited settlers from across Europe to ameliorate the massive depopulation of Georgia following the expulsion of the Arabs. Queen Tamar the Great then led Georgia in a Golden Age of territorial expansion, political emancipation and cultural flourishing which lasted until the early 13th century when Georgia was overrun by Mongols. In the 14th century, Georgia liberated herself from the Mongol Ilkhanate only to suffer a further series of devastating Turkish-Mongol invasions. People migrated from the Caucasus, Europe, and Scandinavia and Western Asia to Georgia in response to King David's invitation to 40,000 Kipchak warriors to settle vacant Georgian land. Additional mercenaries from Europe, Kievan Rus' and Scandinavia were welcomed into the Georgian Royal Army, which helped to liberate much of Armenia. Georgia also saw waves of Mongol and Turkish invasions. At the same time, populations moved from Georgia to places like Armenia, Russia, and Ukraine and Iran as Georgia briefly expanded the Georgian Empire.

## ***Migration Story A***

**Date:** 1037 AD - 1527 AD

**Radius:** 108.7314miles

Latitude: 40

Longitude: 45

## **Movement from Georgia to Armenia**

At some point after 1037 AD your ancestors moved to Armenia and once they reached there this is what they would have experienced:

### ***The Fight for Religious Freedom***

Between 428 AD and 644 AD, Armenia was ruled by local leaders in a period known as the Byzantine era. The Arsacid dynasty collapsed, leaving eastern Armenia to the Persians and western Armenia to the eastern Roman, Byzantine Empire. In 451 the Armenian Apostolic Church was founded, which led the Persians to attempt to reinforce Zoroastrianism. Although the Armenian rebels were defeated at the Battle of Avarayr, the Persians eventually agreed to grant religious freedom within Persian Armenia. People migrated from Greece, Turkey, Iran, and around the Roman Empire and Scandinavia to Armenia rule by the Roman and Persian Empires. The Byzantine Emperor Justinian I settled many Vandals, originally from Sweden and Poland, in Asia Minor. At the same time, populations moved from Armenia to places like Georgia, Azerbaijan, Greece, Turkey, and Bulgaria and Cyprus due to trade, opportunities and land around the Byzantine Empire to cultivate; Emperor Tiberius resettled 10,000 Armenians to Cyprus for this reason and many more were spread around Turkey, Bulgaria and Greece. After the battle of Avarayr much of the Armenian nobility fled to the mountains of Azerbaijan.

### ***The Muslim Invasion***

Between 645 AD and 884 AD, Armenia was ruled by local leaders in a period known as the Early Middle Ages. Armenia was invaded by Muslim Arabs and brought under the sovereignty of the Rashidun Caliphate. The Armenian nobility accepted Arab rule, which persisted over most of Armenia despite the Byzantines retaining some of their land. Although Islam became the dominant religion in Armenia, the Armenian Church enjoyed greater freedom under the Umayyad and Abbasid Caliphates than under previous rulers and rebellions against Muslim rule were petty and infrequent. People migrated from Saudi Arabia, Oman, Syria, and Iran and other countries in the Middle East and Balkans to Armenia as part of the Arab conquest of Armenia and the subsequent influx of Muslim settlers from around the Middle East. The Byzantines still controlled some Armenian land and resettled many Slavs from the Balkan states in it. At the same time, populations moved from Armenia to places like Turkey, Bulgaria, Greece, Macedonia, Saudi Arabia, and Syria and Georgia as a result of the Arab conquest of Armenia, many Christians sought refuge within the Byzantine Empire and Emperor Constantine V continued to move Armenians from Byzantine Armenia to cultivate new land around the Empire.

### ***The Bagratuni Dynasty Seize Power***

Between 885 AD and 1070 AD, Armenia was ruled by local leaders in a period known as the Middle Ages. The Armenian Bagratuni dynasty managed to seize rule from the Arab Caliphate and created a feudal kingdom. Armenia served as a buffer state between the neighboring Byzantine Empire and Abbasid Caliphate. Dynastic disputes and a growing dissatisfaction among the populace weakened the country and Byzantine, and subsequently Seljuk invasions were met with little resistance. People migrated from Georgia, Azerbaijan, Turkey, Syria, Iraq, Iran, and Greece and the Balkans to Armenia as a result of Armenia's growing trade and political influence over neighboring countries and the settling of Syrian Christians and an influx of Greek families from the Balkans. At the same time, populations moved from Armenia to places like Saudi Arabia, Syria, Iraq, Iran, Kuwait, Jordan, Georgia, Azerbaijan, and Lebanon and Turkey when the

Caliphate lost Armenia and many Muslims chose to retreat, the Byzantine Empire continued to resettle many Armenians in Turkey and Syria.

## **Migration Story B**

Date: -386 BC - 932 AD

Radius: 69.7678miles

Latitude: 44.609

Longitude: 7.526

### **Ancient ancestry in Italy**

Your ancestors came from Italy prior to 1197 AD, so let's take a look at what was going on in Italy up to this point:

#### ***The Lombard Kingdom***

Between 568 AD and 774 AD, Italy was ruled by local leaders in a period known as the Byzantine era. The Lombards established their kingdom in the north and center of Italy, often adopting the pre-existing Roman culture. In the 8th century, they finally seized the last remnants of Byzantine-ruled northern Italy, including the Papacy. The Pope immediately called for aid from the Frankish King Charlemagne, who promptly defeated the Lombards, taking their crown and creating from their kingdom the Papal States. People migrated from Slovenia and Czech Republic and the Slavic countries of Eastern Europe to Italy as a result of Lombard migration to Italy and subsequent Slavic raids.

#### ***The Rise of the City States***

Between 775 AD and 960 AD, Italy was ruled by local leaders in a period known as the Early Middle Ages. During this period the Frankish Kingdom, united under Charlemagne, rapidly disintegrated upon his death. Northern Italy continued to be ruled by Carolingian kings as part of the Holy Roman Empire, but there was extensive disunity and political fragmentation among the rulers. Independent city-states rose to prominence and the Byzantine south came under attack from an Arab-Muslim army extending the Umayyad Caliphate. People migrated from North Africa, Greece, and Turkey and the Arabian peninsula to Italy as the Arab-Muslim army invaded the Iberian Peninsula and conquered Sicily and Greeks were resettled in the region.

#### ***The Pope Clashes with the Holy Roman Emperor***

Between 961 AD and 1299 AD, Italy was ruled by local leaders in a period known as the High Middle Ages. At the turn of the millennium, Italy remained in political turmoil but, over the following centuries, began to recover its economy. In the north the Papacy regained its authority and clashed with the Holy Roman Emperor, while merchant republics and city-states began to emerge and grow in power. Southern Italy was conquered by the Normans and, for the first time, united into one kingdom. People migrated from France and Greece and Turkey to Italy due to the Norman conquest of Sicily. As the Byzantine Empire began to decline many Byzantine Greek scholars emigrated to Southern Italy. At the same time, populations moved from Italy to places like Greece, Macedonia, Montenegro, Turkey, Georgia, and Cyprus and the Middle East as Venetian merchants settled in key trading centers across Europe and many Italian peasants and soldiers enlisted to fight in the Crusades. From 1122 Georgia hired mercenaries from Italy and Roman Catholics settled in Cyprus.

# Migration Story B

Date: 441 AD - 1231 AD

Radius: 81.1848miles

Latitude: 42.314

Longitude: 9.555

## Ancient ancestry in Italy

Your ancestors came from Italy prior to 1197 AD, so let's take a look at what was going on in Italy up to this point:

### *The Lombard Kingdom*

Between 568 AD and 774 AD, Italy was ruled by local leaders in a period known as the Byzantine era. The Lombards established their kingdom in the north and center of Italy, often adopting the pre-existing Roman culture. In the 8th century, they finally seized the last remnants of Byzantine-ruled northern Italy, including the Papacy. The Pope immediately called for aid from the Frankish King Charlemagne, who promptly defeated the Lombards, taking their crown and creating from their kingdom the Papal States. People migrated from Slovenia and Czech Republic and the Slavic countries of Eastern Europe to Italy as a result of Lombard migration to Italy and subsequent Slavic raids.

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# Migration Story B

Date: 1197 AD - 1533 AD

Radius: 0miles

Latitude: 40

Longitude: 9

## Ancient ancestry in Italy

Your ancestors came from Italy prior to 1197 AD, so let's take a look at what was going on in Italy up to this point:

### *The Lombard Kingdom*

Between 568 AD and 774 AD, Italy was ruled by local leaders in a period known as the Byzantine era. The Lombards established their kingdom in the north and center of Italy, often adopting the pre-existing Roman culture. In the 8th century, they finally seized the last remnants of Byzantine-ruled northern Italy, including the Papacy. The Pope immediately called for aid from the Frankish King Charlemagne, who promptly defeated the Lombards, taking their crown and creating from their kingdom the Papal States. People migrated from Slovenia and Czech Republic and the Slavic countries of Eastern Europe to Italy as a result of Lombard migration to Italy and subsequent Slavic raids.

### *The Rise of the City States*

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### *The Pope Clashes with the Holy Roman Emperor*

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