Deep Ancestry of the Morkels

André T. Morkel. July 2011

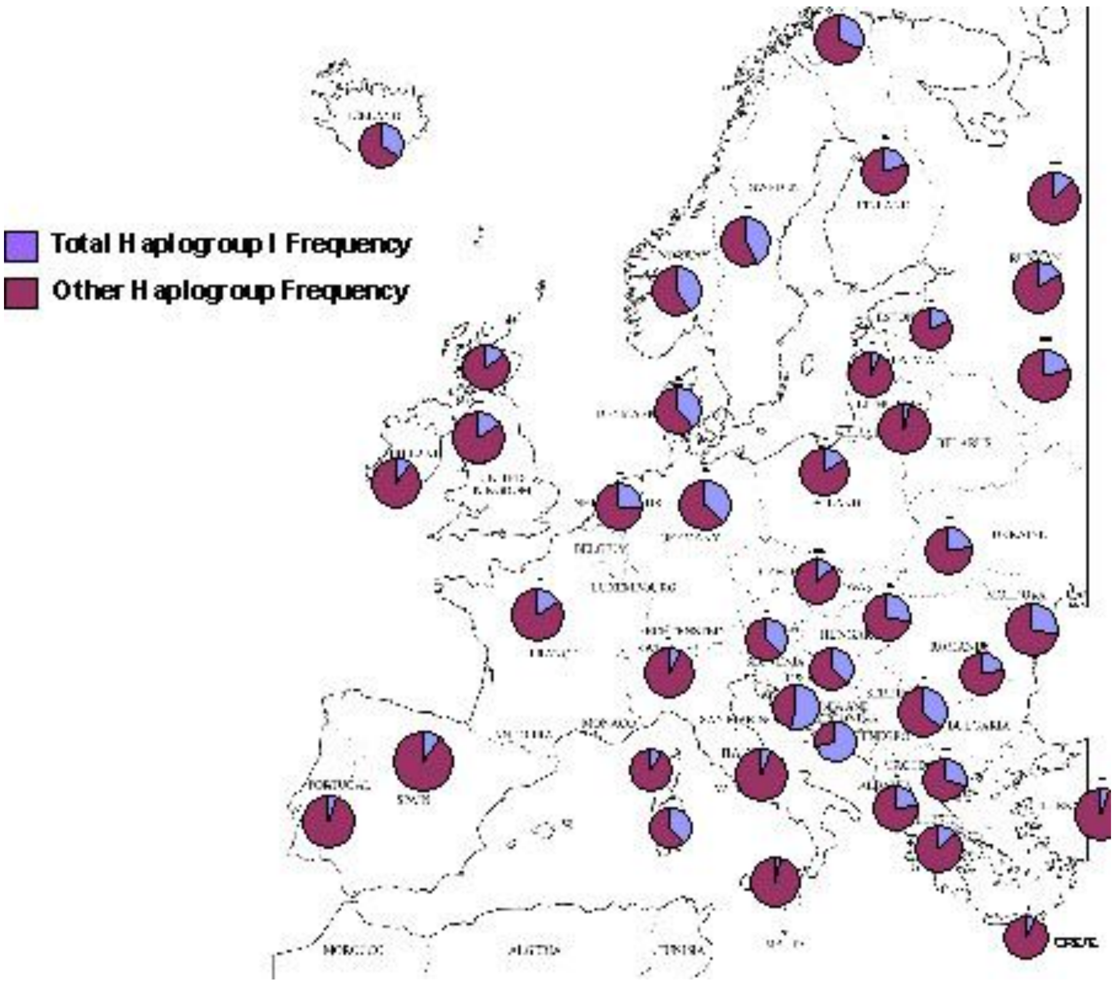
My DNA tests show (1):

Paternal y-DNA: haplogroup I Subclade I1 (M253+)
Maternal mt-DNA: haplogroup H

y-DNA Chromosones are handed down from father to son, and my Y-DNA haplogroup I, and subclade I1 would be common to the whole Morkel family.

My maternal mt-DNA marker is haplogroup H, and is from my Theron Mother's side. Mitochondrial haplogroup H is a predominantly European haplogroup that participated in a population expansion beginning approximately 20,000 years ago. Today, about 30% of all mitochondrial lineages in Europe, spread fairly uniformly, are classified as haplogroup H (2). More about this in Appendix 2.

In this story we focus on the haplogroup I, also called "Europe's Native sons" (1), of which we are part.

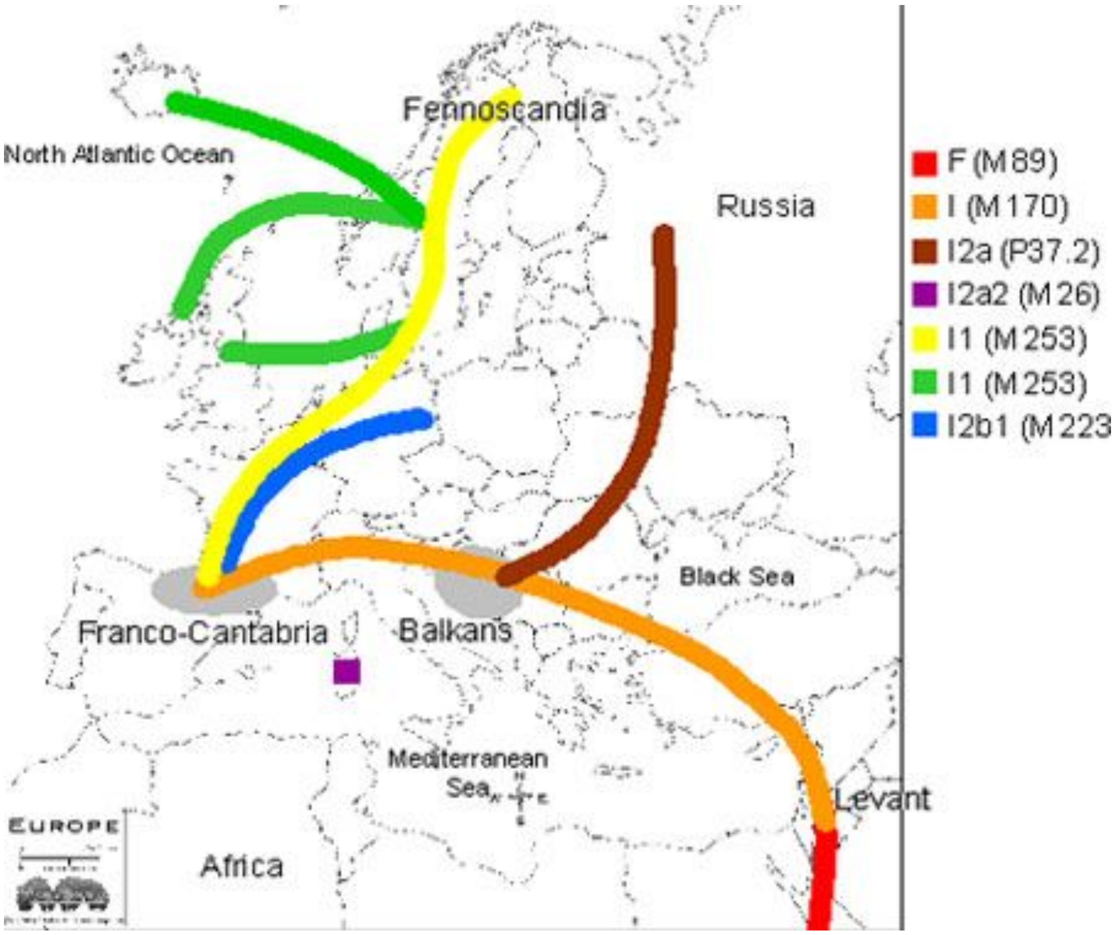


A map illustrating the phylogeography of Y-chromosome haplogroup I in Europe. The frequency of haplogroup I is shown as the blue portion of the pie charts distributed over different locations. It is clear that there is a higher frequency around the Balkans and Scandinavia. Another abundant pocket of haplogroup I is located on the island of Sardinia, west of Italy. (1)

There are two main concentrations of I – Scandinavia/Germany/Netherlands (Fennoscandia) for subclades I1 and I2b1, and Balkans (Bosnia and neighbouring countries) for sublade I2a. There is also a small pocket in Sardinia for subclade I2a2.

A distinguishing feature of haplogroup I is its almost complete absence outside of Europe (apart from modern migrations to the Americas, Africa and Australia over the past 300 to 400 years). Haplogroup I is not found in Africa and at marginal levels in regions of the Middle East and Asia, with borders juxtaposed to Europe.

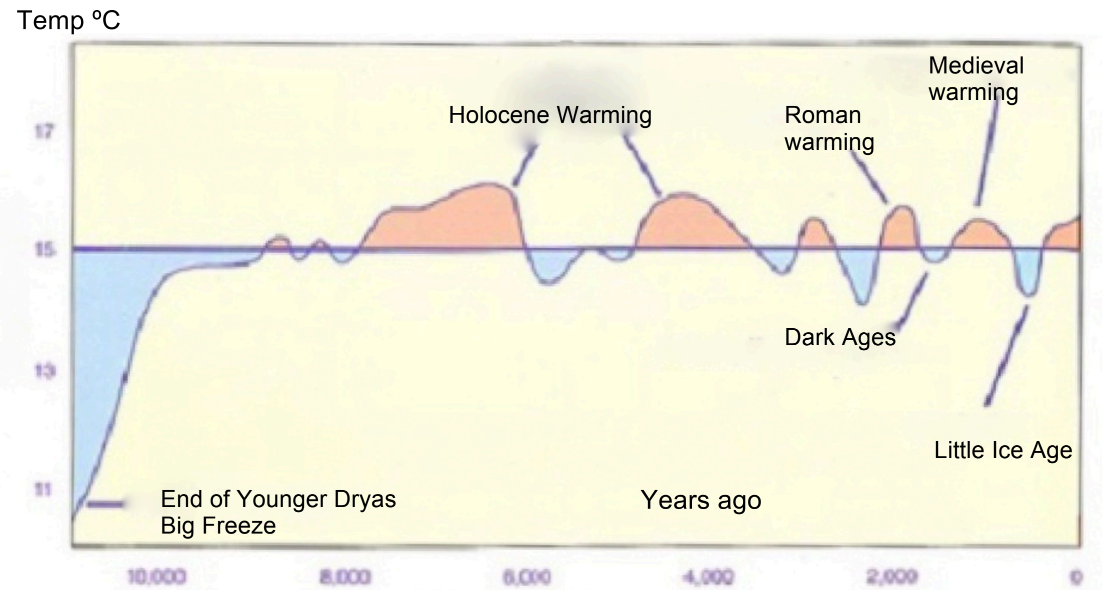
Early origins (1)



Proposed scenario of the movements of human populations bearing haplogroup I. The figure shows likely origin of haplogroup I from the Middle East via the Levantine corridor and its residence in two pockets (gray ovals) during the last glacial maximum in Europe. Subclades of haplogroup I are color coded and corresponding SNPs listed in the legend. The routes and locations are based on evidence from several studies of Y-DNA I haplogroups and haplotypes. (1)   ***The Morkel subclade is in yellow – I1***

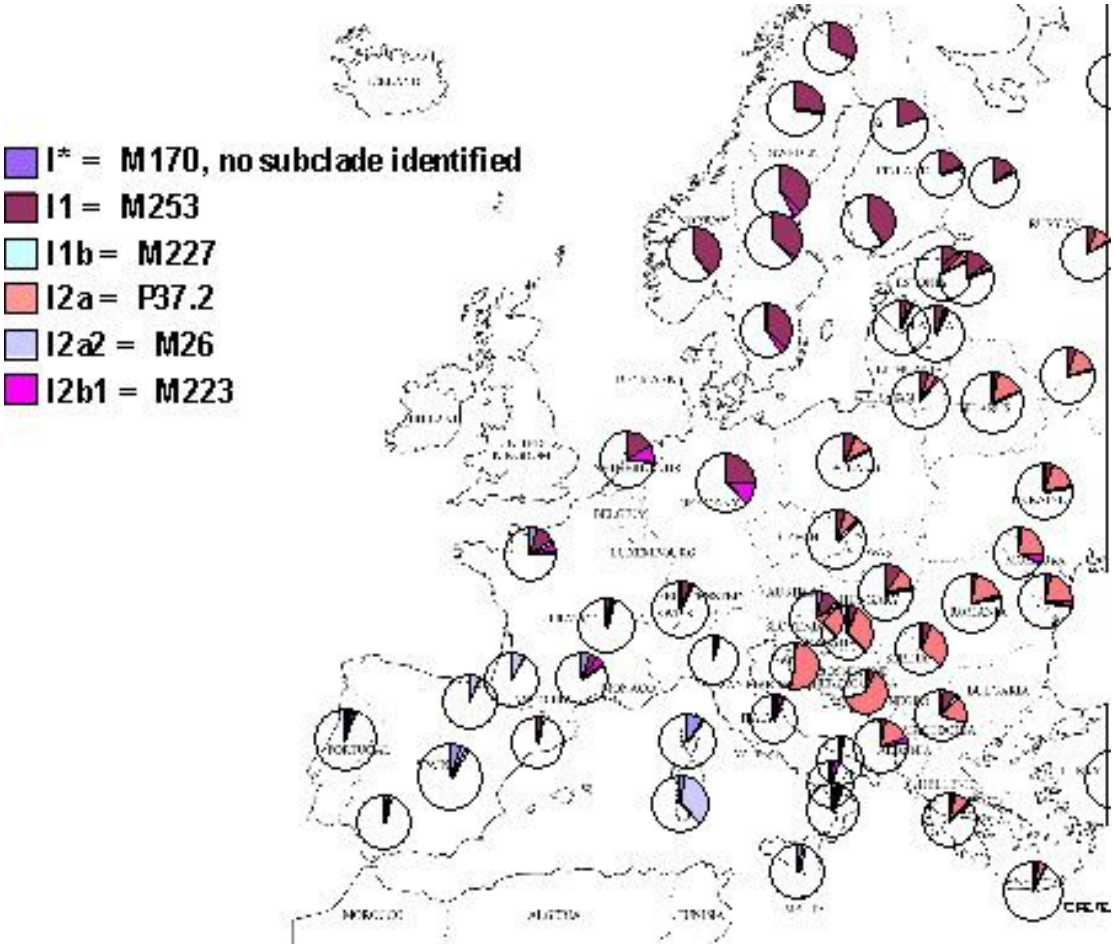
Timeline for Haplogroup I .

50kya	**Migration ex Africa.** About 50,000 years ago, a second and later human migration of suprahaplogroup F out of Africa to the Levant (1)
28 - 24kya	**Haplogroup I spins off.** About 24 to 28,000 years ago the haplogroup I formed as a distinct group on its own and spread into southern Europe. It is associated with Gravettian and Aurignacian cultures (1). It is a phase of the European Upper Paleolithic that is characterized by a stone-tool industry with small pointed blades used for big-game hunting of bison, horse, reindeer and mammoth. People in the Gravettian period also used nets to hunt small game (3).
20-18kya	**Ice sheets and glaciers.** About 18 to 20,000 years ago was a period of extreme cold during the Late Glacial Maximum, with ice sheets and glaciers spreading over northern Europe. Two significant pockets of refuge from the glacial reach existed, one associated with subclade I2a in the Balkans, and one associated with I1 and I2b1 in the Franco-Cantabria region both sides of the Pyrenees (1). Haplogroup R co-existed with I in these refuge areas.
16kya	**Climate warming**. Northwards migration into central Europe (4).
13-11.5kya	**Younger Dryas Big Freeze.** About 13,000 years ago the climate changed abruptly with intense freezing weather for about 1,300 years, causing hardship and interrupting human progress. (5)
11kya	**Holocene warming commences.** Shrinking ice sheets and glaciers allowed human migration northwards eventually reaching Scandinavia. Mesolithic stone tools used (6). Human civilization begins with a transition from hunter-gathering to farming and settlements (7).
4kya	**Bronze age** tools introduced into Europe (8). Megaliths 6kya – 3kya.
3kya	**Iron age** in Europe (9).



Cooling and Warming 12,000 years to Present (14)

We are subclade I1 and shown as a burgundy colour on the piecharts below.



A map illustrating the phylogeography of the subclades of haplogroup I in Europe. The frequency of six different subclades is shown by color in the pie charts. No color indicates the portion of haplogroups other than I observed for each location. The results illustrate a peak of subclade I1 around Scandinavia and I2 around Southeastern Europe. Note also the unique peak of subclade I2a2 in Sardinia. (1)

La Gravette Point from Gavaudun, France – ca 22,000 years ago. Three views of the same tool. (10)

Mesolithic Flint Knife. ca 8,000 years ago (11)

It is somewhat surreal to think of

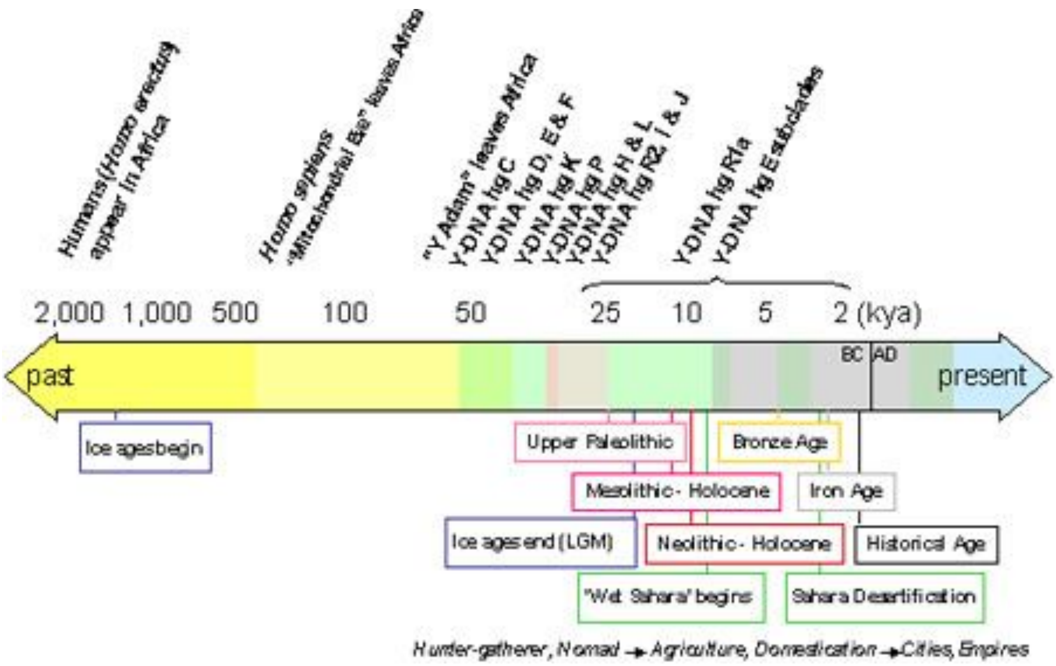
our ancestors using stone tools and hunting bison, reindeer and mammoth, but that is what they did.

Sources and Notes:

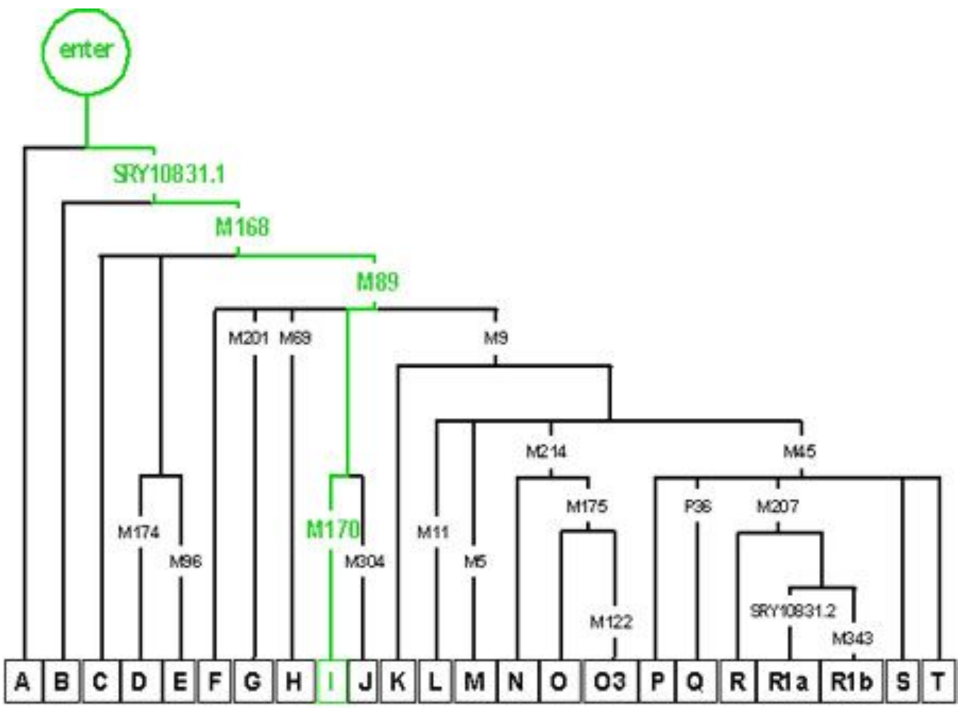
1. Learn about Y-chromosome Haplogroup I. *Genebase Tutorials*. from http://www.genebase.com/learning/article/12
2. http://www.kerchner.com/haplogroups-mtdna.htm
3. http://en.wikipedia.org/wiki/Gravettian
4. http://en.wikipedia.org/wiki/Late_Glacial_Maximum
5. http://en.wikipedia.org/wiki/Younger_Dryas
6. http://www.stoneagetools.co.uk/mesolithic-gallery.htm
7. http://www.wisegeek.com/what-is-the-holocene.htm
8. http://www.unr.edu/sb204/geology/europe.html
9. http://en.wikipedia.org/wiki/Iron_Age
10. http://en.wikipedia.org/wiki/Gravettian
11. http://www.stoneagetools.co.uk/mesolithic-gallery.htm
12. http://www.scs.illinois.edu/~mcdonald/worldmtdnamap.pdf
13. http://www.eupedia.com/europe/neolithic_europe_map.shtml
14. David Archibald, 2010. *The Past and Future of Climate*

Appendix 1
More on the y-DNA Haplogroups of Europe

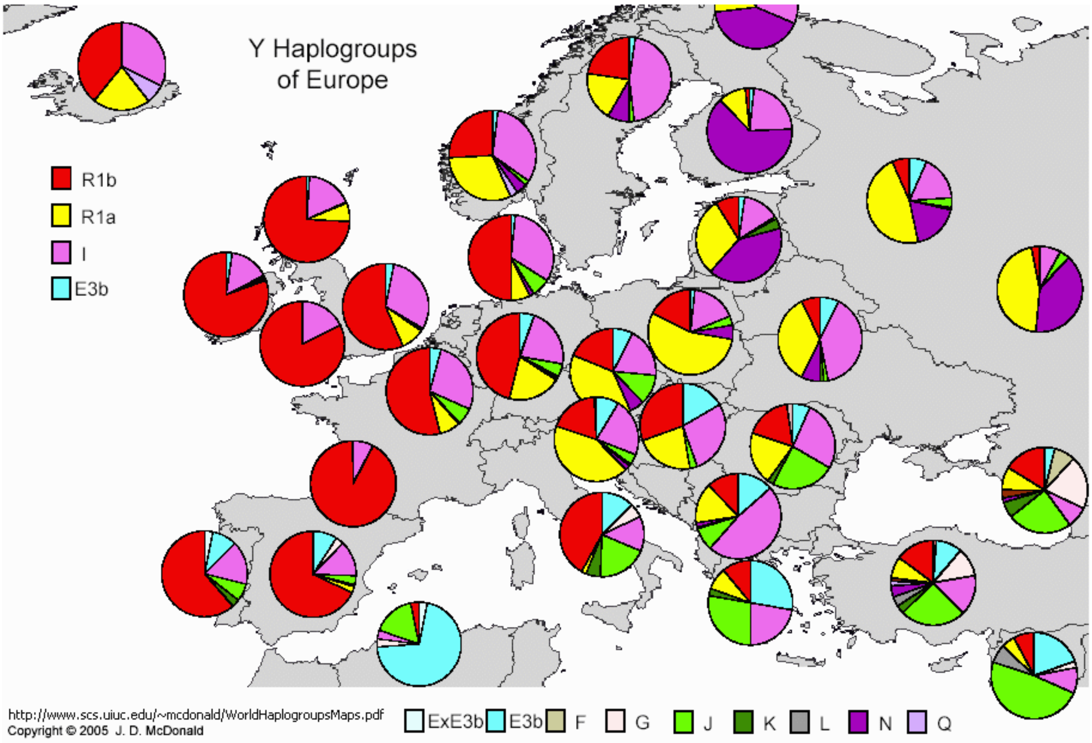
Most Europeans are either I or R haplogroups. It seems that the R group came somewhat later to Europe than I. About 25,000 years ago the R group were in the area of present day Iran and spread into Northern and Western Europe around 5,000 to 3,000 years ago(13). This contradicts another source (1) that have them sharing with the in the refuges mentioned during the late glaciation period of 20,000 to 18,000 years ago.



The emergence of modern humans. A schematic timeline is shown with the approximate appearance of Homo sapiens, with particular attention to the estimated origins of different ancestral Y-chromosomal haplogroups. Below the timeline is shown key geological and anthropological events. Kya = thousand years ago, hg = haplogroup, LGM = last glacial maximum (1).



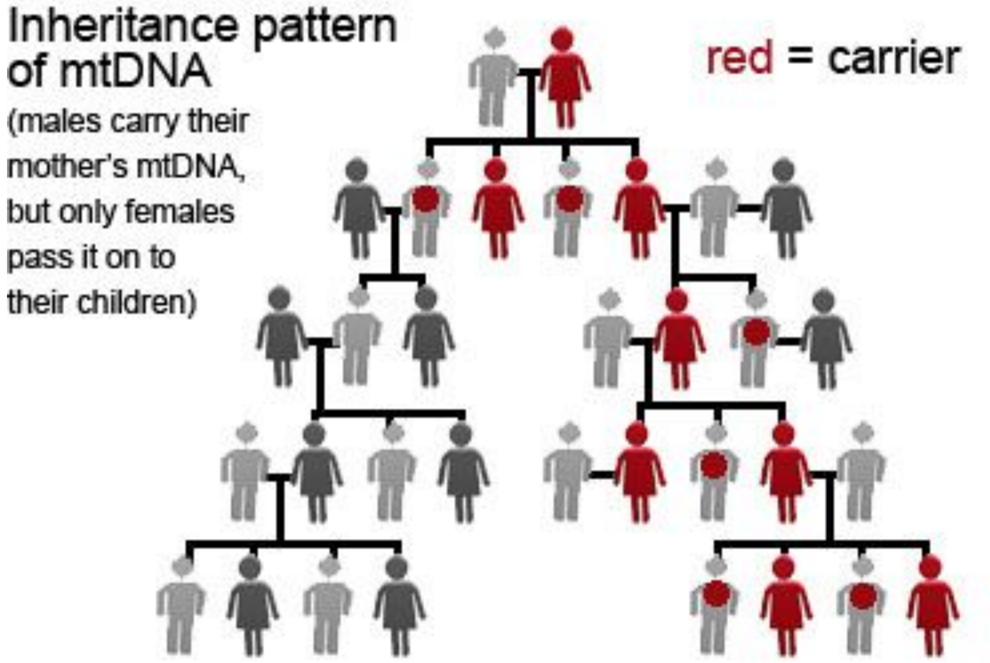
This phylogenetic tree of the Y-DNA haplogroups is presented in a more typical inverted fashion below, with the A-T haplogroups defined by SNP markers as they branch from the root. In order to identify your personal haplogroup, simply follow the branches from the 'enter' point with the SNPs identified, here exemplified for haplogroup I with the green highlighting (1).



Y-Haplogroups in Europe (12)

Appendix 2
The Maternal mtDNA haplogroups (1)

Maternal inheritance pattern of mtDNA:
mtDNA has a very unique inheritance pattern which differs from all the other types of DNA in our body. It is passed down along the maternal line from a mother to all of her children. Males will carry the mtDNA of their mother, but when they have children, their children will carry the mtDNA of their own mother, not their father. Thus, only daughters will pass the mtDNA on to future generations.



Why does it hold ancestral information?
The maternal inheritance pattern of the mtDNA has important significance for ancestral studies. While most of the other types of DNA in our body are mixed as they are passed down from generation to generation, the mtDNA remains unmixed because it has a strict line of descent from mother to child. This means that our mtDNA is the same as our mother's and our mother's mother's mtDNA from hundreds, even thousands of generations ago. By testing our own mtDNA, we are in fact able to indirectly read the mtDNA genetic code of our own maternal ancestors from thousands of generations ago.

Studies have shown that Europeans fall into one of several main mtDNA haplogroups: H, I, J, K, N1, T, U2e, U3, Ur, X, W, U5, and V. mtDNA Haplogroup H is one of the most dominant family groups in Europe, representing approximately 40% of the mtDNA gene pool in populations in various parts of Europe and extending as far as western Asia.

Maternal mtDNA Haplogroup H
Haplogroup H originated in Near and Middle east prior to 30,000 years ago and expanded within the Near East 25,000 to 30,000 years ago. Haplogroup H first entered Europe 20,000 to 25,000 years ago (at the peak of the ice age) in association with a second Paleolithic wave (possibly contemporary with the diffusion of the Gravettian technology 20,000 to 25,000 years ago). 19,000 to 22,000 years ago during the last glacial maximum (LGM), the climate became significantly colder and dryer. During this cold peak, extreme deserts occupied most of Europe and Northern Asia was covered by steppe-tundra, forcing early the Paleolithic populations, consisting of Haplogroup H ancestors of Northern and Central Europe to retreat to the south, to the refugium areas in the western Caucasus and southern European peninsulas.

15,000 years ago, climatic conditions improved. Haplogroup H was strongly involved in the late-glacial expansion from ice-age refugia after the LGM. Due to its high frequency and wide distribution, Haplogroup H is implicated to have participated in all subsequent episodes of putative gene flow in western Eurasia (such as the Neolithic diffusion of agriculture from the Near East, the expansion of the Kurgan culture from southern Ukraine, the recent events of gene flow to northern India).

Distribution

Haplogroup H is the most common and frequent haplogroup in European Caucasian populations (western Eurasia) High frequency. Haplogroup H accounts for approximately 40% of total mtDNA pool variation for most of Europe. Most prevalent haplogroup in all European populations except the Saami Haplogroup H exhibits a characteristic distribution pattern of Northwest to Southeast. The frequency of Haplogroup H is highest in the Northwest and declines towards East and South, reaching 20% in the Near East and Caucasus, <10% in the Gulf and 5% to 10% in Northern India and Central Asia.

Despite the broad geographic distribution pattern of Haplogroup H, further investigation of each Subclade of Haplogroup H provides further resolution and reveals a much more specific and distinctive distribution pattern for each Subclade of Haplogroup H. mtDNA Haplogroup H is the most prominent maternal European Haplogroup, and the papers were able to successfully sub-classify members of Haplogroup H into subclades H1 to H16 based on characteristic SNPs in the mtDNA, many of which are located in the coding region.