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“Southern or Eastern European Origins? The Major Doan(e) Family Y-Chromosome DNA Haplogroups”

Over the past twenty years, DNA testing has revolutionized the way scientists study human migration. Having collected genetic samples from people all over the world, scientists now have a better understanding of how populations moved out of Africa (where *Homo sapiens* originated perhaps 200,000 years ago) and into Europe, Asia, and the Americas. Based on these studies, they have divided DNA into large "super-families" called "haplogroups." It is possible to predict a person's DNA haplogroup from the results of a 12-marker or 25-marker DNA test, although sometimes an additional test, called a "SNP" (single nucleotide polymorphism) test, is needed for confirmation.¹

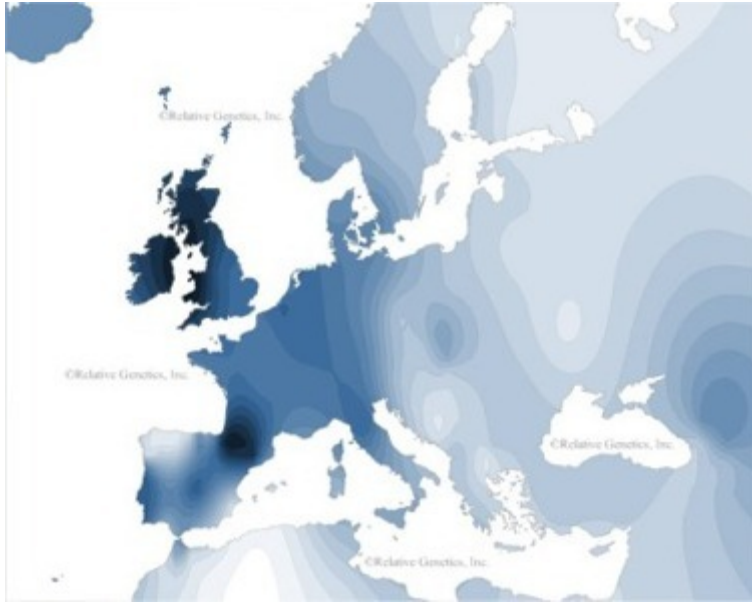
Y-Chromosome DNA

Haplogroups are identified by specific markers (or mutations) on the Y chromosome (for males) or mitochondrial DNA (which both men and women possess). Both types of genes mutate at a set rate, which allows scientists to predict when particular lineages split off from one another. The theory behind this genetic study is that all descendants of a common ancestor will share particular markers, unless there have been additional subsequent mutations. These haplogroups have been mapped on a worldwide basis. See for example, the Web link showing y-chromosome DNA distribution: <http://www.scs.uiuc.edu/~mcdonald/WorldHaplogroupsMaps.pdf#pref>, with approximate percentages of major haplogroups for specific countries or cultures. The second plate illustrates the y haplogroups of Europe, of particular interest for us in terms of analyzing the origins of the Doan(e) family, followed by a simplified tree of Y-chromosome haplogroups.

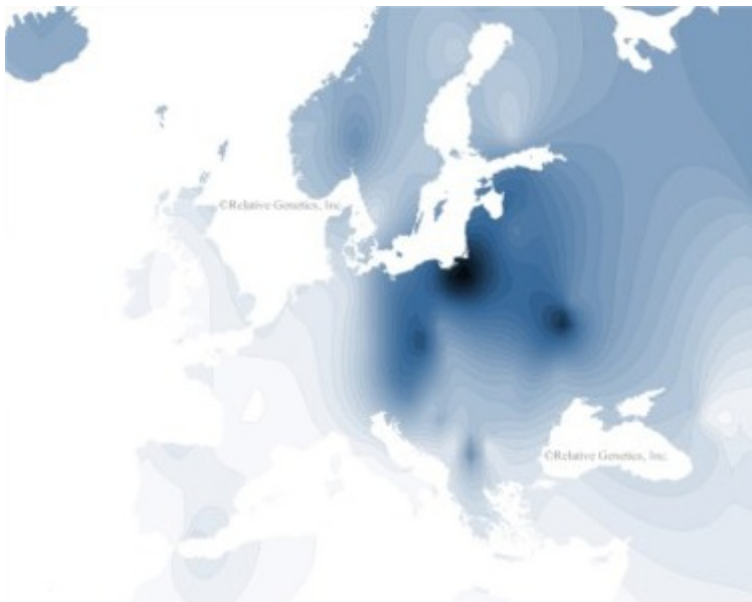
As you may see, the majority of both British and Irish populations belong to the R1b haplogroup (shown as red on this map) which probably originated in Spain and southern France during the late Paleolithic (Ice Age) period, perhaps 30,000 years ago, as what we now know as Cro-Magnon man, and then migrated northwestwards towards the British Isles beginning 12,000 year ago or so.² A smaller percentage of the British and Irish people is associated with the related R1a haplogroup (shown as yellow), which seems to have developed in southern Russia or the Ukraine, and is perhaps to be identified with speakers of Indo-European languages, of which English and most European languages are members. Of the original thirty male members of the Doan(e) family who took the 12-marker Y-chromosome DNA test, ten (or 33 % of the total) belong to one of these haplogroups (nine with R1b and one with R1a markers). Following are maps showing the distributions of these haplogroups in Europe, western Asia and North Africa:

¹ Anon., "The Cheek/Chick DNA Project," <http://www.moostuff.com/dna/haplo.html> (accessed March 21, 2010)

² A subset of the R1b1 haplogroup known as the "Atlantic Modal Haplotype" (AMH) consists of six genetic markers that have been found at high frequencies in people from the European Atlantic coast, such as Wales, Ireland, the Orkney Islands, the Dutch province of Friesland, and the Basque country in northern Spain. In the British Isles, the AMH has been associated with people of Celtic and Germanic ancestry. "The Cheek/Chick DNA Project," <http://www.moostuff.com/dna/haplo.html> (accessed March 21, 2010)



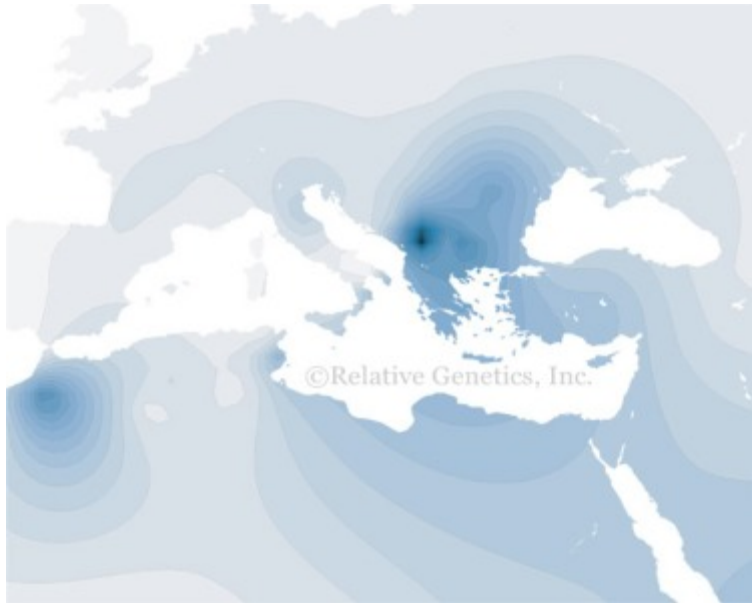
Distribution of Haplogroup R1b ([Relative Genetics ↗](#)) from Cheek/Chick Family Project



Distribution of Haplogroup R1a ([Relative Genetics ↗](#)) from Cheek/Chick Family Project

Interestingly, Haplogroup R1b1 is the most common Y-DNA haplogroup in the white U.S. population. As of May 2008, nearly 70% of the Y-DNA results submitted to the [Ybase ↗](#) website were Haplogroup R1b, while only 17% were Haplogroup I and 7% were Haplogroup R1a. A 2005 study found that 58% of white American males are in Haplogroup R1b.

Another haplogroup, represented in the test by six Dones (the so-called Cheshire aristocrats), is E1b1, also known as E3b, with a Mediterranean center of distribution (see the following map):



Distribution of Haplogroup E1b1 ([Relative Genetics](#)) from the Cheek/Chick Family Project

This group seems to have developed about 20,000 years ago in the Middle East, among the first farmers who helped spread agriculture to the rest of Europe, western Asia and north Africa. As may be seen on the map, this group forms a very small percentage of the British and Irish population, about 2 %. However, some studies have found clusters of E1b1 in parts of England and especially northern Wales (shown in blue on the haplogroup map). By contrast, E3b is present in about 25% of the Sicilian and Greek populations, and 50%-80% of North Africans. It is particularly common in the Berber people, who live in Morocco, Algeria, Tunisia and Libya. It's also the second most common Y-DNA haplogroup in men of Ashkenazi Jewish descent. The presence of this haplogroup in the British population, though relatively rare, is evidence of a past migration of people from southern Europe, possibly soldiers and settlers who arrived during the Roman occupation of Britain between 80 and 400 A.D., or perhaps later Mediterranean settlers in Britain.

By far the largest group of Doan(e) men originally tested (thirteen or 43.3 %) are members of the I haplogroup, specifically I1b, known since 2007 as I2. See the following Wikipedia article for a full discussion of this group: [http://en.wikipedia.org/wiki/Haplogroup_I2_\(Y-DNA\)](http://en.wikipedia.org/wiki/Haplogroup_I2_(Y-DNA)). This haplogroup seems to have developed in the Balkan *refugium* (refuge) during the last Ice Age (about 15,000 years ago) and is the most common in that region today. After the glaciers began to melt, members of this group began to migrate through central Europe, eventually reaching the British Isles perhaps during the Celtic invasions of the first millennium B.C. Together with the related I1a haplogroup, sometimes called the "Viking haplogroup" because it seems to follow routes of Viking conquest in northern Europe, I forms about 15-20% of the British and Irish population (shown as pink on the map). I1a is present in about 35% of the population of southern Norway, southwestern Sweden, and Denmark (see the following distribution map):



Distribution of Haplogroup I1a ([Relative Genetics](#)) from the Cheek/Chick Family Project

The final Doan(e) family member tested was from the [I2](#) haplogroup (found primarily in the eastern Mediterranean, north Africa and southern Europe, e.g., forming 20% of the Italian population). However, it is only rarely found in the British Isles outside of migrant groups.

Based on the percentages given above, and the fact that four of the Doan(e) family men were exact matches with each other for the I2 haplogroup, it has been suggested that the founder of the clan in the U.S. and Canada was also a member of this group. How his ancestors reached Britain from Southern or Central Europe remains, of course, a mystery, though given my conclusions of Celtic origins for the Doan(e) name, presented at the 2008 International Family Association meeting, I would suggest they may have arrived in Britain by the 6th or 5th century B.C.

Mitochondrial DNA

As mentioned earlier, both males and females have mitochondrial DNA (mtDNA) but it is generally inherited only from the mother. It can be used to study female-line ancestry, just as Y-DNA is used to study male-line ancestry. MtDNA is categorized into haplogroups like Y-DNA, though the letters do not correspond: see the final map and list of mitochondrial haplogroups in the above Web link: <http://www.scs.uiuc.edu/~mcdonald/WorldHaplogroupsMaps.pdf#pref>. Interestingly, mtDNA haplogroups do not seem as closely tied to geography as Y-DNA haplogroups, perhaps because women have historically been more mobile, generally moving with their husbands, though European evidence suggests continuity of female lineages dating back to the Paleolithic era. Some studies have suggested joint Y-DNA and mtDNA migrations in certain areas of the world, though not specifically in the British Isles, to my knowledge. There have been no organized attempts at an mtDNA study of Doan(e) women, partly because their maiden names are generally lost once they marry, though this of course would merit further research.

