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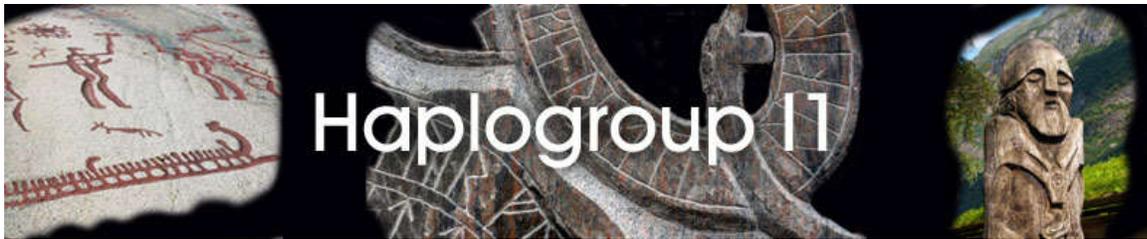
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Haplogroup I1 (Y-DNA)

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Author: [Maciamo](#)

Last update February 2015 (updated phylogeny).



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Geographic distribution

Haplogroup I1 is the most common I subclade in northern Europe. It is found mostly in Scandinavia and Finland, where it typically represent over 35% of the male Y-chromosomes. Associated with the Norse ethnicity, I1 is found in all places invaded by ancient Germanic tribes and the Vikings. Other parts of Europe speaking Germanic languages come next in frequency. Germany, Austria, the Low Countries, England and the Scottish Lowlands all have between 10% and 20% of I1 lineages.

Distribution of haplogroup I1 in Europe

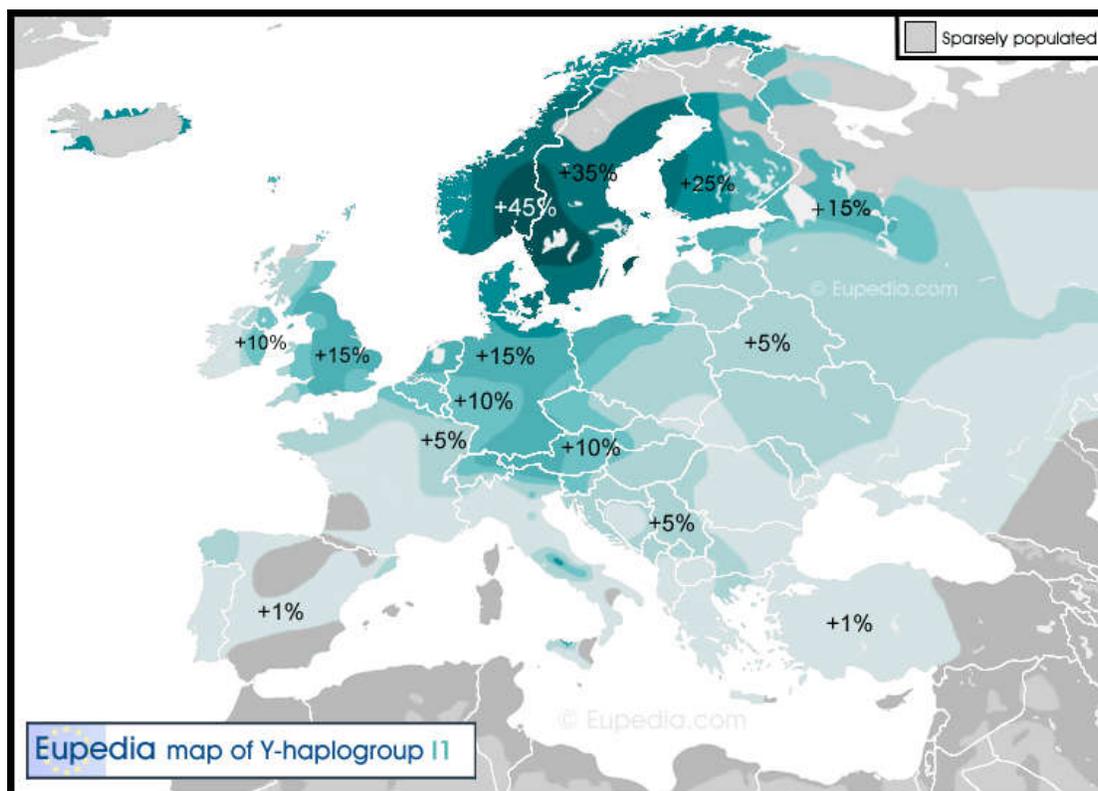


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Tip

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Origins & History

Haplogroup I is the oldest major haplogroup in Europe and in all probability the only one that originated there (apart from very minor haplogroups like C6 and deep subclades of other haplogroups). It is thought to have arrived from the Middle East as haplogroup IJ sometime between 40,000 and 30,000 years ago, and developed into haplogroup I approximately 25,000 years ago. In other words, Cro-Magnons most probably belonged to IJ and I (alongside older haplogroups like F and C6).

The I1 branch is estimated to have split away from the rest of haplogroup I some 20,000 years ago. I1 is defined by at least 25 unique mutations, which indicates that this lineage experienced a serious population bottleneck. Men belonging to this haplogroup all descend from a single ancestor who lived between 10,000 and 8,000 years ago.

It has been speculated that I1 evolved in isolation in Scandinavia during the late Upper Paleolithic and Mesolithic periods, when hunter-gatherers from southern Europe recolonised the northern half of the continent from their LGM refugia. The oldest attested evidence of postglacial resettlement of Scandinavia dates from 11,000 BCE with the appearance of the [Ahrensburg culture](#).

However, evidence emerged ([Szécsényi-Nagy et al. 2014](#)) from the testing of Early Neolithic Y-DNA from western Hungary that haplogroup I1 was in fact present in central Europe at the time of the Neolithic expansion. A single I1 sample was identified alongside a G2a2b sample, both from the early [Linear Pottery \(LBK\) culture](#), which would later diffuse the new agricultural lifestyle to most of Poland, Germany and the Low Countries.

It is therefore possible that I1 lineages were among the Mesolithic European hunter-gatherers assimilated by the wave of East Mediterranean Neolithic farmers (represented chiefly by Y-haplogroup G2a). There is also evidence from the Neolithic samples of the Early Neolithic [Starčevo](#) and [Cardium Pottery](#) cultures that haplogroup I2a lived alongside G2a farmers both in south-east and south-west Europe.

The most likely hypothesis at present is that I1 and I2 lineages were dispersed around Europe during the Mesolithic, and that some branches prospered more than others thanks to an early adoption of agriculture upon contact with the Near Eastern farmers who were slowly making their way across the Balkans and the Mediterranean shores. The small group of farmers from the early LBK culture from Hungary might have formed a blend of I1 and G2a men. Yet distinct families would have spread in different directions and met varying successes in their expansion. It would appear that a [founder effect](#) in the northern LBK population led to a sudden explosion of I1 lineages, perhaps in part thanks to their better knowledge of the Central European terrain and fauna (since hunting was typically practised side by side to agriculture to complement the farmers' diet). I1 would later have spread to Scandinavia from northern Germany.

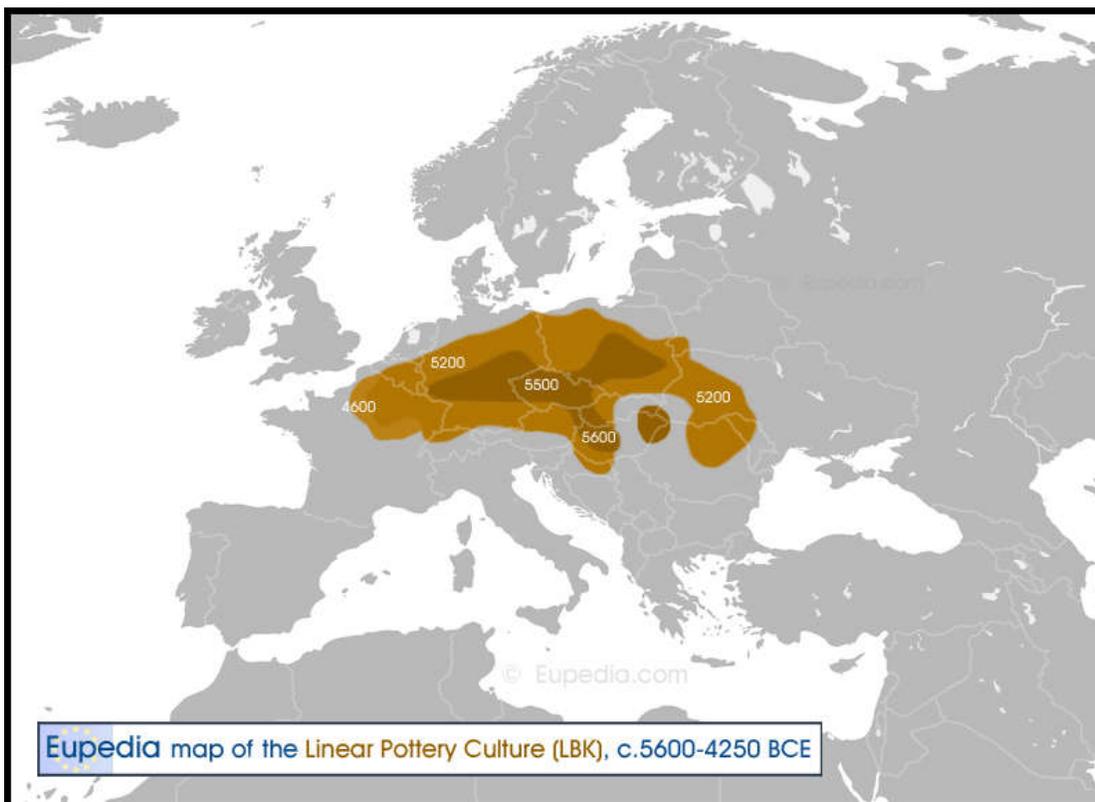
Extent of the Linear Pottery culture (LBK, c. 5600-4250 BCE)



GEOREFERENCED HISTORICAL DATA

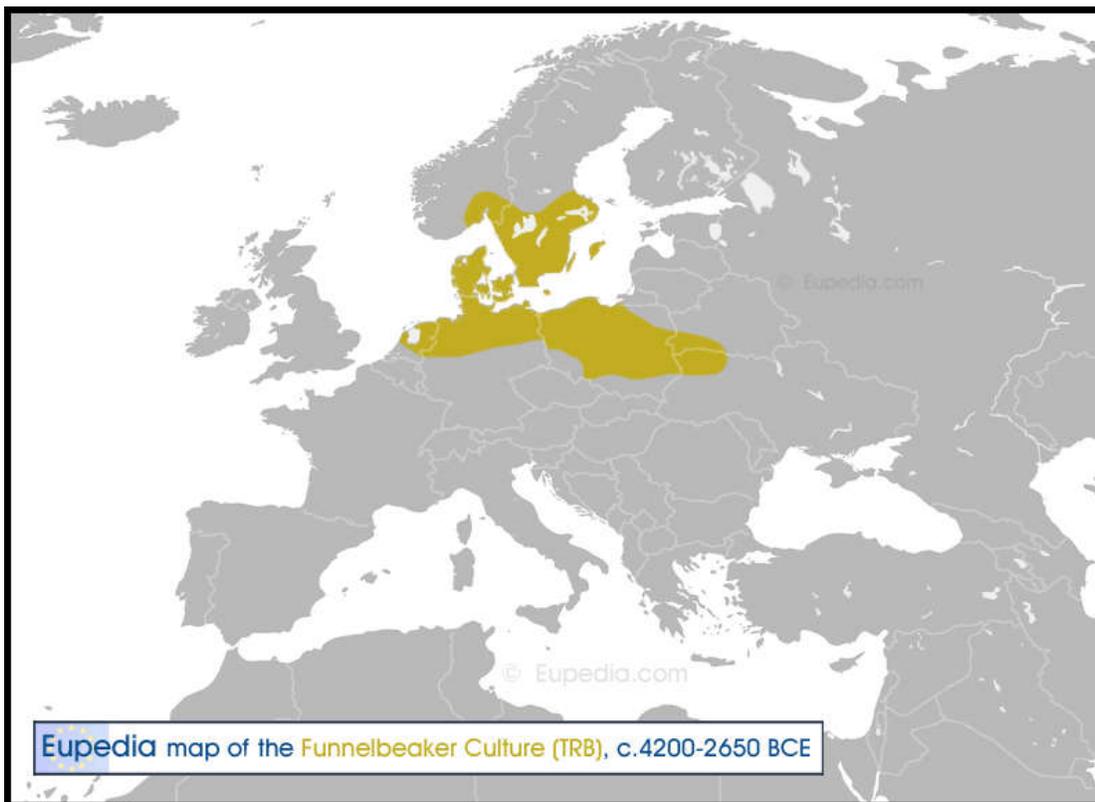
Use the *euratlas* data for spatial or geo-historical analysis and research or to create history wall map

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Five Mesolithic samples from Scandinavia dating from c. 6000 BCE were reported by [Lazaridis et al. \(2014\)](#) , and yielded two I*, one I2*, one I2a1b, and one undetermined sample. Haplogroup I1 wasn't part of them. Likewise other samples from the same period from Luxembourg and northern Spain turned out to be I2a1b and C1a2. This data is consistent with a Neolithic dispersal of I1 from Hungary with the LBK culture and the subsequent [Funnelbeaker culture](#) (4000-2700 BCE) in northern Germany and southern Scandinavia. One Swedish sample from the late Mesolithic [Pitted Ware culture](#) (3200-2300 BCE) also turned out to belong to I2a1 and not I1.

Extent of the Funnelbeaker culture (c. 4200-2650 BCE)



Both the Funnelbeaker and Pitted Ware cultures represent a merger between the Neolithic (farming) and Mesolithic (hunter-

gatherer) lifestyles. Neolithic farmers from Germany penetrated late into Scandinavia and in small numbers. There is archeological evidence that Neolithic farmers settled in southern Scandinavia and lived side by side with hunter-gatherers for several centuries during the Funnelbeaker culture. [Skoglund et al. 2012](#) tested and compared the DNA of one Neolithic farmer and three hunter-gatherers from Sweden dating from 5,000 years ago. It turned out that the farmer was much closer genetically to modern Mediterranean people, especially the Sardinians, who are generally considered the best proxy population to Neolithic European farmers. The hunter-gatherers's DNA resembled that of modern Northeast Europeans, and perhaps even more that of the Finns and Samis than Scandinavians.

Scandinavian hunter-gatherers would have adopted the new Neolithic lifestyle little by little, using pottery and keeping domesticated animals (sheep, cattle, pigs and goats) to complement their traditional diet of fishing and game hunting. The cultivation of wheat, barley and legumes was fairly limited due to the cold climate. The cold climate was actually a barrier to the expansion of farmers from the continent. This is why Scandinavians retained a greater percentage of Mesolithic ancestry than virtually all other Europeans, apart from the Samis, Finns, Balts and Russians.

How did I1 spread around northern Europe ?

So how comes that modern Scandinavians belong essentially to three haplogroups (I1, R1a and R1b) that haven't been found in Mesolithic Scandinavian samples ? I1 would have been the first to penetrate into Scandinavia during the farming transition that lasted roughly from 4,200 to 2,300 BCE. The most likely explanation for the replacement of Mesolithic paternal lineages (I* and I2) by I1 throughout Nordic countries, including Lapland and Finland, is that the few farmers and stock breeders that did spread around Scandinavia were almost exclusively I1 men (through a founder effect).

In the vast majority of farming societies men are the ones who inherit the land and the livestock. As wild game became scarcer, especially during cold winters, farmers would have had a definite advantage for food and survival prospects. As surely happened in other parts of Europe, women from hunter-gathering families were married to wealthy farmers. After several millennia, with agricultural land and livestock always inherited by I1 lineages from father to son, I1 became the dominant lineage, even though their maternal lines had become hybridized over time. Nowadays, according to the autosomal admixture tested performed by [Lazaridis et al. \(2014\)](#), Scandinavians have only a few percents more Mesolithic than Neolithic admixture.

The Saami of Lapland were the last hunter-gatherers of Europe. But even they turned to stock breeding by domesticating the indigenous reindeer, better suited to the harsh local climate than cattle, pigs, sheep and goats. Reindeer domestication appears to have originated with North Asian [N1c1](#) people. And indeed modern Saami are primarily N1c1 people with only a minority of Scandinavian paternal lineages (I1, R1b, R1a). The presence of R1a and R1b, and its very modern proportion to I1 (using central Sweden as a reference) indicates that I1, R1a and R1b incorporated the Saami gene pool together relatively recently (probably in historical times, from or after the Viking age).

N1c1 lineages, however, may have not have arrived that early either. N1c1 is associated with the diffusion of the Uralic languages. According to a phylogenetic reconstruction of the Uralic languages by [Honkola et al. \(2013\)](#), the Proto-Finnic and Proto-Samic split from each others only 2,500 years ago, and Samic dialects started diversifying less than 1,000 years ago. In all likelihood all trace of the Mesolithic inhabitants of Lapland has been wiped out on the Y-chromosomal side, just as in most of Scandinavia.

How did I1 become Germanic ?

From 2800 BCE, a large-scale cultural and genetic upheaval hit Scandinavia with the arrival of the Indo-Europeans from Eastern Europe, who introduced the Copper Age and Early Bronze Age practically without Neolithic transition. The first Indo-Europeans to reach Scandinavia were the [Corded Ware](#) people from modern Russia, Belarus and Poland, who are thought to have belonged predominantly to [haplogroup R1a](#). These people shared some similar maternal lineages as Scandinavian I1 inhabitants, including mtDNA haplogroups [U2e](#), [U4](#) and [U5](#), but also brought many new lineages such as H2a1, H6, W and various subclades of I, J, K and T.

The second major Indo-European migration to Scandinavia was that of [haplogroup R1b](#), the branch that is thought to have introduced Proto-Germanic languages, as an offshoot of the Proto-Celto-Germanic speakers from Central Europe. R1b probably entered Scandinavia from present-day Germany as a northward expansion of the late [Unetice culture](#) (2300-1600 BCE).

According to the [Germanic substrate hypothesis](#), first proposed by Sigmund Feist in 1932, Proto-Germanic was a hybrid language mixing Indo-European (R1b, and to a lower extent R1a) and pre-Indo-European (native Nordic I1) elements. This hybridisation would have taken place during the Bronze Age and given birth to the first truly Germanic civilization, the [Nordic Bronze Age](#) (1700-500 BCE).

I1 in Finland

Finland is not a Germanic country linguistically despite having been part of the Kingdom of Sweden for most of its recorded history until the 19th century. Over 60% of Finns belong to the Uralic haplogroup N1c1, which is concordant with the fact that Finnish language (Suomi) also belongs to the Uralic linguistic family. One might therefore wonder whether the 28% of I1 lineages in Finland came from their Scandinavian neighbours (notably Sweden) sometime between the Bronze Age and the Middle Ages, or on the contrary whether I1 spread throughout [Fennoscandia](#) at the same time during the Mesolithic period, when the ice sheet receded over the region.

A look at the phylogenetic tree shows that the Finns, Swedes and Norwegians belong primarily to the northern cluster (L22). Out of five subclades, two (L287 and L300) are almost exclusively Finnish, while the others are Scandinavian. This is enough

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to think that a late Neolithic colonisation of Fennoscandia from Denmark or southern Sweden (perhaps as late as 2000 or 3000 years ago) could have brought I1 around the same time in Finland, central/northern Sweden and Norway. This would have happened well before the first Indo-European speakers reached Scandinavia. Finland is the only country with more than 15% of I1 where the Germanic culture and language didn't take root. A good reason for this would indeed be if Germanic culture did not yet exist in Scandinavia at the time when I1 reached Finland.

Of the 28% of I1 in Finland, 80% belong to the exclusively Finnish L287 and L300 subclades, while the rest (5%) generally resemble more closely Swedish I1. These are typically found on the west and south-west coast of Finland, where Swedes have settled in historical times and where Swedish is still spoken. This is also where most of the R1b (3.5%) and Scandinavian R1a-Z282 (3%) is to be found. The Scandinavian I1 in Finland is found at a similar proportion to R1b and R1a as in Sweden. In contrast, Finnish I1 is found in all the country, where hardly any Germanic Y-DNA is present. This is another confirmation that the I1 in Finland is pre-Germanic, pre-Bronze Age, and consequently of Mesolithic origin.

Unfortunately this timeline seriously conflicts with the estimated age of I1a2c, which Ken Nordtvedt calculated to be only 2000 years old based on STR variations. This method is not very accurate because it fails to take into account population size. Larger populations create more genetic variations. Nordic countries have always had a lower population density than central of southern Europe.

Before the Bronze Age, Nordic people were still hunter-gatherers, while the rest of Europe had been farming for up to 3500 years. Agricultural societies could support populations ten times higher than hunter-gatherers in similar climates. In cold Fennoscandia, the pre-Indo-European population density must have been at least 20 times lower than in Mediterranean Europe. This means that the mutation rate would also be 20 times lower, and therefore that haplogroup I1 is much older than STR variations alone would suggest. If the age estimate of 2000 years old happened to be correct anyway (very unlikely), the only way I1 could have become so predominant in Finland is through an unprecedented founder effect, with a single male lineage quickly replacing one fourth of all lineages in the country.

Germanic migrations

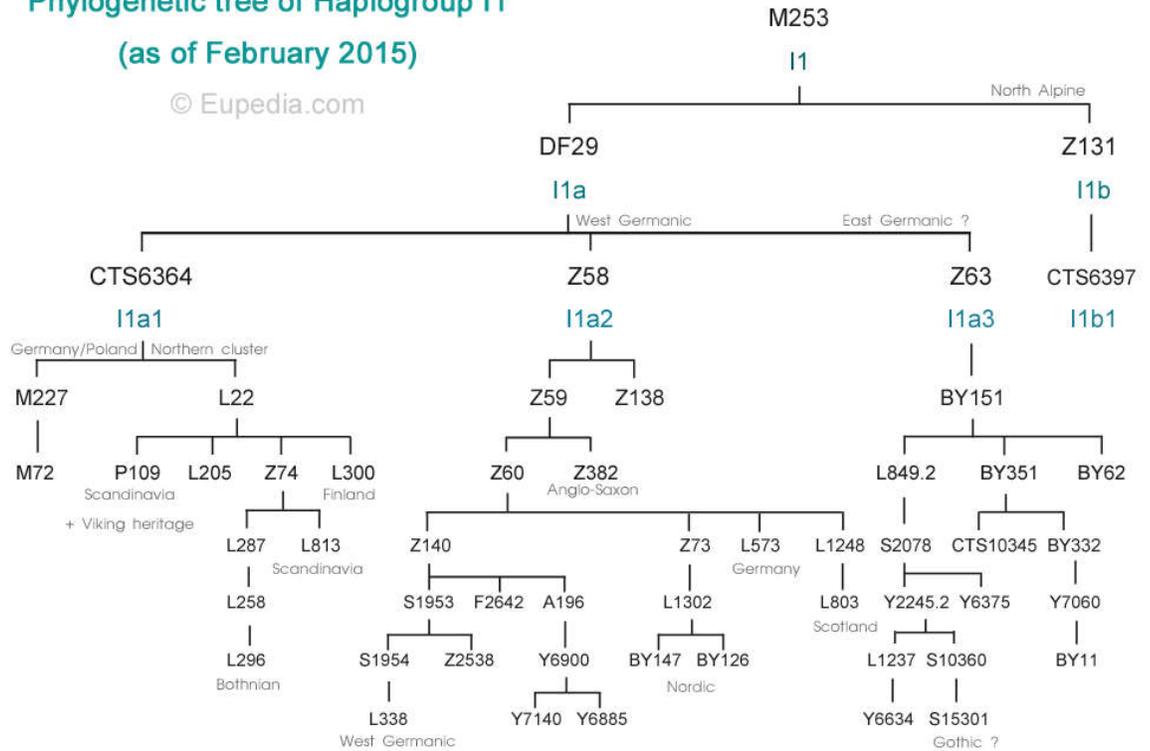
The [Germanic migrations](#) dispersed I1 lineages to Britain (Anglo-Saxons), Belgium (Franks, Saxons), France (Franks, Visigoths and Burgundians), South Germany (Franks, Alamanni, Suebi, Marcomanni, Thuringii and others), Switzerland (Alamanni, Suebi, Burgundians), Iberia (Visigoths, Suebi and Vandals), Italy (Goths, Vandals, Lombards), Austria and Slovenia (Ostrogoths, Lombards, Bavarians), Ukraine and Moldova (Goths), as well as around Hungary and northern Serbia (Gepids). The I1 found among the Poles (6%), Czechs (11%), Slovaks (6%) and Hungarians (8%) is also the result of centuries of influence from their German and Austrian neighbours. The relatively high frequency of I1 around Serbia and western Bulgaria (5% to 10%) could be owed to the Goths who settled in the Eastern Roman Empire in the 3rd and 4th centuries.

The Danish and Norwegian Vikings brought more I1 to Britain, Ireland, the Isle of Man, Normandy, Flanders, Iberia, Sicily... The Swedish Vikings ([Varangians](#)) set up colonies in Russia and Ukraine, and outposts as far as the Byzantine Empire, the Caucasus and Persia. The higher frequency of I1 in Northwest Russia (east of the Baltic) hints at had a particularly strong Varangian presence, which is concordant with the establishment of the [Kievan Rus'](#) by the Swedes.

Subclades and Haplotypes

Phylogenetic tree of Haplogroup I1 (as of February 2015)

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Grouping by STR

All Germanic tribes expanded from a small geographic core around Denmark and southern Sweden within the last 2500 years. STR (short tandem repeats) variations allows to divide I1 members in various categories. There are two main clusters, each with their own subgroups.

- the **Northern cluster**, peaking in Norway, Sweden and Finland, which corresponds to the **I1a2 (L22+, formerly known as I1d)** subclade. It normally has an STR value greater than 22 for DYS390.
 - the **Norse group**, corresponds to Ken Nordtvedt's Norse (mostly Swedish) and Ultra-Norse (mostly Norwegian and Icelandic) haplotypes. The Ultra-Norse haplotype 1 (I1-uN1) differs from the Norse one by having DYS385b=15 and (usually) DYS449=29.
 - the **Bothnian group**, is found mostly in Finland and northeast Sweden. It corresponds to **I1a2c1 (L258+)** subclade, which it makes up 75% of the I1 lineages in Finland.
- the **Southern cluster**, most common in Denmark, Germany, the Low Countries and the British Isles. It corresponds to Ken Nordtvedt's Anglo-Saxon haplotype (originally Danish and North German).
 - the **Danish/Polish group** usually has a DYS557 value greater than 15.
 - the **Western group**, comprising the Low countries, England, Scotland and Ireland, matches the **Z58+** subclade. It probably matches Anglo-Saxon and Frisian/Batavian ancestry.
 - there appears to be a specific **Welsh subgroup** defined by a GATA-H4 value superior or equal to 11. This subgroup is also found in England and on the continent, but is especially common in Wales.
 - the **German group**, is the most common type of I1 in Germany, France, Italy and Central Europe, but is also found in the British Isles and to a lower extent in Scandinavia. It is defined by a DYS456 value inferior to 15. It corresponds to the **Z63+** subclade.

SNP Analysis

- **Z131+** is a minor subclade that has been found in areas bordering the ancient Celtic-Germanic boundary (Belgium, central Germany, Bohemia).
- **DF29+** represents the vast majority of I1 lineages.
 - **CTS6364+** is a major subclade centered mostly on Scandinavia, Germany and Poland.
 - **M227+** has so far been found only in the Baltic countries, Belarus, Poland, Switzerland, France and south-west England (Devon). It has a peculiar distribution lying at the confines of Germanic-speaking regions, although it has never been found in the core of ancient Germanic culture.
 - **L22+** (aka S142+) is the main Nordic subclade. It is also very common in Britain, especially on the east coast where the Vikings settled most heavily, in the Low Countries and Normandy (also doubtlessly the heritage of the Danish Viking), as well as in Poland and Russia (Swedish Vikings).
 - **P109+** A mostly southern Scandinavian subclade, with a presence in all the regions settled by the Danish Vikings. It has been found sporadically in many parts of Europe, such as western Iberia,

- northern Italy, the Balkans, Lithuania and Russia.
- **L205+** is mostly limited to the Low Countries, France and Britain. Isolated cases were also identified in Sweden and Spain.
- **L287+** is an overwhelmingly Finnish subclade (found nation-wide), with a very small presence in Norway, Sweden, Poland and Russia.
- **L300+** is a minor subclade found almost exclusively in southern Finland.
- **L813+** is a predominantly Scandinavian subclade, particularly common in southern Norway. It is also found in Britain (likely of Viking descent) and in the northern Netherlands (but not in Germany).
- **Z58+** is chiefly West Germanic, with a very strong presence in Germany, the Low Countries and Britain. It is also found to a lower extent in Nordic countries and throughout Continental Europe. Its age has been estimated around 4000 years before present.
 - **Z138+** (aka Z139+) is a very disparate subclade. It is found at very low frequency throughout the Germanic world, with a peak in England and Wales (although it could just be because of oversampling in Britain). It has also been found in Portugal, southern Italy and Romania. Z138+ corresponds to **AS2**, **AS10**, **AS1010.2**, **AS10910**, **AS1221** and **AS1414** and **Esc-13** in FTDNA's STR-based nomenclature.
 - **Z59+** is the main branch of Z58.
 - **Z382+** has been found especially in the British Isles and Germany, with a minor presence in Scandinavia. Isolated samples were also identified in the Netherlands, Finland, Italy, Croatia and Romania. corresponds to **AS3**, **AS3-911**, **AS13** and **Sw** in FTDNA's STR-based nomenclature.
 - **Z60+** is found throughout the Germanic world
 - **Z140+** is a strongly West Germanic subclade, found essentially in the British Isles the Low Countries, northern France, central and southern Germany, and Switzerland. It is very rare in Nordic countries. Isolated samples were found in Spain, central and southern Italy, Slovenia, Bohemia, Poland, Ukraine and Russia. Z140* matches the **AS5**, **AS6**, **AS814** and **EE** haplotypes in FTDNA's STR-based nomenclature.
 - **L338+** has a similar distribution to Z140. It typically has the STR value GATA-H4=9. L338+ corresponds to **AS1**, **AS1H**, **AS8**, **AS114** and **AS11616** in FTDNA's STR-based nomenclature.
 - **Z73+** (and L1301+) is chiefly northern Scandinavian and Finnish. It is also found in Russia, on the east coast of Britain and the Scottish Isles (Viking heritage). Z73+ corresponds to **AS9** and **AS16** in FTDNA's STR-based nomenclature.
 - **L573+** appears mainly North German, with isolated samples in France and Sweden.
 - **L1248+** is a minor subclade that has been found in Britain, Germany and Russia.
 - **L803+** has only been identified in Scotland.
 - **Z63+** is a strongly German subclade, virtually absent from Nordic countries. It is most common in Central Germany, the Benelux, England, Lowland Scotland, as well as Poland. It has also been found in Russia, Ukraine, the Balkans, Italy, Spain and Portugal.
 - **Y2245.2+** makes up a big part of the Z63 in Russia, Ukraine, the Balkans, Italy and Iberia. Could have been spread by the Goths.
 - **BY351+** is a rare subclade found in Portugal and Sardinia, where it was probably brought by the Vandals.

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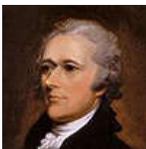



Search Inventory

Famous individuals



[Malmströma et al.](#) tested the DNA of [Birger Jarl](#) and his son Eric Birgersson, and they were identified as members of haplogroup I1. Birger Jarl was one of Sweden's greatest medieval statesman. He was the founder of Stockholm, and acted as regent of Sweden for 18 years. His sons Valdemar and Magnus succeeded each others as kings of Sweden, and their descendants for one hundred years. This dynasty is known as the [House of Bjelbo](#), and all six kings were presumably members of haplogroup I1.



The [Hamilton DNA Project](#) compared the Y-DNA of four descendants of [Alexander Hamilton](#), one of the a Founding Fathers of the United States of America. All shared very close STR values, proving beyond reasonable doubt that they shared a same recent patrilineal ancestor.



[Andrew Jackson](#) (1767-1845), the 7th president of the United States, most probably belonged to haplogroup I1 based on a [comparison](#) of his genealogy and results from the Jackson DNA Project.



The haplogroup of the celebrated Russian writer [Leo Tolstoy](#) was inferred by testing one of his



descendants, Pyotr Tolstoy.



Calvin Coolidge (1872-1933), the 30th President and 29th Vice President of the United States, was identified as a member of haplogroup I1 according to testing of relatives.



The personal genomics company [23andMe](#) tested the Y-chromosomal haplogroup of business magnate and multi-billionaire **Warren Buffett** and singer/film producer **Jimmy Buffett** to determine whether they shared a common patrilineal ancestor. Both men were found to belong to haplogroup I1, though apparently not to closely related subclades.

Other famous members of haplogroup I1

- **Kenneth Leon Nordtvedt** (born 1939) : professor emeritus in the Physics Department at Montana State University and a senior researcher specializing in relativistic theories of gravity. He is a well known researcher in the genetic genealogy community.

Follow-up

[Ask your questions and discuss about haplogroups on the Forum](#)

Haplogroup E1b1b (Y-DNA)

The main paternal lineage in North Africa.

Haplogroup G2a (Y-DNA)

The main paternal lineage of Neolithic farmers.

Haplogroup I1 (Y-DNA)

The original paternal lineage of Nordic Europe.

Haplogroup I2 (Y-DNA)

The main paternal lineage of Mesolithic Europeans.

Haplogroup J1 (Y-DNA)

The dominant Arabic paternal lineage.

Haplogroup J2 (Y-DNA)

The Greco-Anatolian paternal lineage.

Haplogroup R1a (Y-DNA)

The dominant paternal lineage in Northeast Europe.

Haplogroup R1b (Y-DNA)

The dominant paternal lineage in Western Europe.

Y-DNA Maps

Maps of the main paternal lineage in Europe.

Haplogroup H (mtDNA)

The largest European maternal lineage.

MtDNA by country

Frequencies by regions in Europe and the Near East.

Facts about DNA

Fun tutorial about the basics of genetics.

Neanderthal facts & myths

How much did we inherit from Neanderthals ?

The origins of red hair

Where is it more common? Where did it come from?

Medical DNA

SNP's linked with traits and medical conditions.

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