Possible γ-Haplogroup I1
Dispersal/Expansion

For details see
http://www.goggo.com/terry/HaplogroupI1/
TDR (TDRobb@gmail.com), August 2011

I1 : DYS455=8
A  : DYS390=22
AA : DYS390=22 & DYS575=15
BA : DYS390=22 & DYS575=9
AAA : DYS390=22 & DYS575=15 & DYS456=14
AAB : DYS390=22 & DYS575=15 & DYS456=14 & GATA-H4≥10
ABA : DYS390=22 & DYS575=9 & DYS456=14 & GATA-H4<10
ABB : DYS390=22 & DYS575=9 & DYS456>14 & GATA-H4<10

BAA : DYS390>22 & DYS511=9 & DYS458=15
BAB : DYS390>22 & DYS511=9 & DYS458>15
BBA : DYS390>22 & DYS511>9 & DYS617=13
BBB : DYS390>22 & DYS511>9 & DYS617>13

Beware: The above decisions, based on STR values, are only a guide to assigning I1 people to an I1 STR Clan. Back-mutations, and other independent mutations, can potentially cause any particular I1 person to be mis-assigned to the wrong clan. Maybe 5% or more are affected.

Beware: Note DYS459a=7 is a completely different branch, that by chance convergence ends up erroneously in BAA or IAB. DYS459a=7 peaks in Poland, and is associated with the Z63+ mutation.

For other maps, see http://www.goggo.com/terry/HaplogroupI1/

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Clan  | Origin          | Homeland      | Size  | SNP
-----|-----------------|---------------|-------|-----
I1-BBB | 2,500 BC       | Denmark & England | 4%     | L22+
I1-BBA | 3,400 BC       | Norway & Sweden | 20%    | L22+ (most)
I1-BAB | 3,500 BC       | Finland (East)  | 6%     | L258+
I1-AA  | 3,200 BC       | Finland (West)  | 9%     | L258+
I1-ABB | 3,400 BC       | Norway         | 5%     |
I1-ABA | 3,400 BC       | Denmark        | 13%    | L338+
I1-AAB | 1,900 BC       | Ireland & Scotland | 6%  | L258+
I1-AAB | 3,700 BC       | Wales & England | 5%     | L338+
I1-AAA | 4,400 BC       | Germany        | 26%    | L338+

I1  | 5,500 BC       | Northern Europe | 100%  | M253+

Beware: The dates of origin given above are the TMRCA for the I1 Clans. They rely on various STR mutation rates and a 30 year generation time, plus other assumptions. Commonly used rates are used here, but changing those rates and assumptions will change the above dates of origin.

Beware: The range and distribution of all haplogroups in Europe have been complicated by the comparatively recent Migration of “Barbarians” (before about 500 AD) and the Migration of “Vikings” (around 800 AD to 1100 AD). The “Barbarians” were mainly Germanic tribes from east of the Rhine and north of the Danube, comprising of the Goths (Visigoths and Ostrogoths), Vandals, Lombards, Burgundians, Franks, and Suab etc. Also the Angles, Saxons, and Jutes; plus the non-Germanic Huns from Central Asia.
**Migration into Europe 45,000 BC – 39,000 BC**

Modern humans first ventured into Europe around 45,000 years ago, sharing it with the Neanderthals for 10,000 years or more, before the Neanderthals disappear from the fossil record around 30,000 years ago.

**Mousterian**
- 48,000 BC – 26,000 BC (Neanderthal)

**Aurignacian**
- 36,000 BC – 26,000 BC (Unknown)

**Gravettian**
- 26,000 BC – 20,000 BC (Modern Human)

**Epigravettian**
- 20,000 BC – 8,000 BC (Modern Human)

**Solutrean**
- 20,000 BC – 15,000 BC (Modern Human)

**Magdalenian**
- 15,000 BC – 8,000 BC (Modern Human)

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**Palaeolithic Population Estimates for Europe**

- **38,000 BC – 26,000 BC**: 3,000 to 30,000 people, with 1/3rd in Franco-Cantabrian region; Neanderthal population is 1,000 to 10,000.
- **26,000 BC – 23,000 BC**: 3,000 to 30,000 people, with 1/3rd in Franco-Cantabrian region; Neanderthals extinct by 26,000 BC.
- **23,000 BC – 17,500 BC**: 3,000 to 30,000 people, with 1/3rd in Franco-Cantabrian region; Neanderthals extinct by 26,000 BC.
- **17,500 BC – 14,000 BC**: 5,000 to 50,000 people, with 2/3rd in Franco-Cantabrian region.
- **14,000 BC – 12,000 BC**: 20,000 to 200,000 people, with 2/3rd in Franco-Cantabrian region.

Reference: "Estimates of Upper Palaeolithic meta-population size in Europe from archaeological data" by Bocquet-Appel et al., Journal of Archaeological Science, 2005;
"Targeted Retrieval and Analysis of Five Neandertal mtDNA Genomes", by Briggs et al., Science, 2009

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**Mousterian Culture**: Characterized by flake-based technology. Bifacial tools rare. Exclusively associated with Neanderthals in Europe.

**Aurignacian Culture**: Characterized by blade-based tools; antler, ivory and bone projectile points; body ornamentation and cave art.

**Gravettian Culture**: Characterized by small pointed bladelets; construction of large skin tents on mammoth bone frames; and the first spear throwers and eyed needles. Venus figurines.

**Epigravettian Culture**: Characterized by the reduction of stone tools. Use of bone is rare. Evolved from the Gravettian.

**Solutrean Culture**: Characterized by fine bifacial leaf points, light projectiles, barbed arrowheads; body ornamentation and cave art. Bow-and-arrow originates with this culture.

**Magdalenian Culture**: Emerges from the Solutrean. (Alternatively emerges from the Badegoulian Culture, which arose in Eastern Europe at the LGM and then spread into the western refugia.)

**Aurignacian Culture** (36,000 BC – 26,000 BC) extended across Europe and into the Near East.

**Gravettian Culture** (26,000 BC – 20,000 BC) followed the Aurignacian Culture extended across Europe. Fragmented and retreated towards the Last Glacial Maximum (LGM) in Italy and perhaps also in Central/Eastern Europe.

**Solutrean Culture** (20,000 BC – 15,000 BC) followed the Gravettian Culture in Western Europe.

**Magdalenian Culture** (15,000 BC – 8,000 BC) followed the Solutrean Culture in mid-latitudinal Western Europe. Linked with the post-LGM population expansion.

Reference: "The Archaeogenetics of Europe" by Soares et al., Current Biology, 2010
About 20,000 years ago, ice covered much of northern Europe, with the Last Glacial Maximum at 16,000 BC. Sea-levels were lower too, and Britain and Ireland were joined by land to continental Europe. Refugia were situated in northern Iberia/south-west France, Italy, the Balkans, and Ukraine.

After the ice retreats, these refugia people repopulate Europe from before 13,000 BC to 7,000 BC (the end of the Last Glacial Period was 10,000 BC). Sea Levels Rise 120m isolating Britain from continental Europe by 7,000 BC.

### Last Glacial Population History of Western Europe

23,000 BC – 17,500 BC: Refugium; (Low population)
17,500 BC – 14,000 BC: Initial demic expansion; (Low population)
14,000 BC – 12,000 BC: Main demic expansion into Northern Europe; (Founder effect and expansion)
12,000 BC – 10,900 BC: Population stasis in Northern Europe, but increase in Southern Europe; (Founder effect and expansion)
10,900 BC – 9,500 BC: Renewed population growth in Northern Europe but not Central Europe; (Younger Dryas)
5,500 BC – 5,000 BC: Rapid population rise at start of Linear Pottery Culture (LBK) Neolithic in Germany; (Founder effect and expansion)
5,000 BC – 3,500 BC: Population decline in Germany; (Younger Dryas)
3,500 BC – 2,500 BC: Rapid population rise to new plateau in Germany; (Younger Dryas)
4,000 BC – 3,000 BC: Rapid population rise at start of Funnel Beaker Culture (TRB) Neolithic in Denmark; (Younger Dryas)

### Culture Timelines

- **Azilian Culture** (9,500 BC – 7,500 BC) followed the Magdalenian Culture in South-west France and Spain.
- **Maglemosian Culture** (7,500 BC – 5,500 BC) followed the Azilian Culture in Germany, Scandinavia, and East Britain.
- **Sauveterrain Culture** (8,000 BC – 7,000 BC) followed the Azilian Culture in Northern France and Switzerland.
- **Kongemosian Culture** (5,500 BC – 4,600 BC) followed the Maglemosian Culture in Southern Scandinavia.
- **Linear Pottery Culture** (5,500 BC – 4,500 BC) followed the Maglemosian Culture in Central & Southeast Europe. Linear Pottery Culture == LBK.
- **Ertebelle Culture** (4,600 BC – 3,200 BC) followed the Kongemosian Culture in Northern Germany and Southern Scandinavia.
- **Funnel Beaker Culture** (3,200 BC – 2,800 BC) followed the Ertebelle Culture in North Central Europe. Funnel Beaker Culture == TRB.
- **Corded Ware Culture** (2,800 BC – 2,400 BC) followed the Funnel Beaker Culture in most of Europe.
- **Battle Axe Culture** (2,800 BC – 2,400 BC) followed the Funnel Beaker Culture in Norway and Sweden.
- **Single Grave Culture** (2,800 BC – 2,400 BC) followed the Funnel Beaker Culture in Denmark, Northern Germany, the Netherlands and Belgium.
At around 7,000 BC, a mass migration of farmers came from the Near East and into Europe. This was the start of the Neolithic Revolution in Europe, and the new culture of farming quickly spread all the way to Britain by 4,000 BC.

Before the Neolithic Revolution, European people were hunter-gatherers, with the land supporting less than 0.1 people per km$^2$. After the Neolithic Revolution everyone became farmers, with the land supporting more than 2.0 people per km$^2$. The population of Europe increased significantly after the transition from hunting-gathering to farming.

Early farming settlements often had fortifications, perhaps indicating that the interaction with the indigenous hunter-gatherers, or alternatively other farming groups, may not have been entirely peaceful.

Dates shown in this map are when evidence of farming first appears in the given area.

Reference: “The Spread of Agriculture from Central Europe to the Atlantic”, by Peter Rowley-Conwy, Current Anthropology, October 2011

For other maps, see http://www.goggo.com/terry/HaplogroupI1/
Expansion of Indo-Europeans
4,000 BC – 1,000 BC

Indo-European migrations according to the Kurgan model. The Indo-Europeans met the pre-Celtic Urnfield culture (1,300 BC - 700 BC). Bronze Age cultures traded (grinding stones, flint, amber, salt) with each other along rivers (using canoes), and paths (using wagons drawn by oxen, reindeer, or later horses).
The ancient Celts occupied the core Hallstatt territory in central Europe by 500 BC. By 250 BC the Celts had expanded their territory to include most of central Europe as well as Iberia and the British Isles. And by that date there were significant numbers of Celts in Scotland, Ireland, Wales, Cornwall, Isle of Man, and Brittany.

Alpine-Celts were in the original core territory by 900 BC. Gaulish-Celts went to France by 700 BC. Iberian-Celts went to Spain by 600 BC. Brythonic-Celts went to Britain and Ireland by 450 BC.

At the same time as the Celts were expanding westward from central Europe, various Germanic Tribes began migrating southward out of Sweden and through Denmark into north central Europe.


For other maps, see http://www.goggo.com/terry/HaplogroupI1/
The Green+Yellow areas show the maximal expansion of the Roman Empire by 117 AD. The Green+Yellow areas show the Roman Empire by 14 AD.

The Roman Empire included most of what would now be considered Western Europe. The main countries conquered were England/Wales (Britannia), Spain (Hispania), France (Gaul), Greece (Achaea), the Middle East (Judea) and the North African coastal region.

Reference:
For other maps, see http://www.goggo.com/terry/HaplogroupI1/
Migration of “Barbarians”
100 AD – 500 AD

Germanic tribes contributed to the collapse of the Western Roman Empire. Tribes such as the Goths and Vandals split away. Huns (a non-Germanic people from Central Asia) attack the Ostrogoths in 376 AD and push other Germanic tribes westward. The Franks invade across the Rhine in 406 AD. The Visigoths invade Italy in 410 AD, and later migrate to Iberia driving out the Vandals. The Ostrogoths invade Italy in 488 AD. The Angles, Saxons, and Jutes invade England in 450 AD. (Irish Gaelic Scott spread to Scotland in ~500 AD.)

Population Estimates

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<tr>
<th>Region</th>
<th>500AD</th>
<th>1000AD</th>
<th>1500AD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Britain &amp; Ireland</td>
<td>1 million</td>
<td>2 million</td>
<td>5 million</td>
</tr>
<tr>
<td>France &amp; Lowlands</td>
<td>5 million</td>
<td>6 million</td>
<td>16 million</td>
</tr>
<tr>
<td>Spain &amp; Portugal</td>
<td>4 million</td>
<td>7 million</td>
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<tr>
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<td>5 million</td>
<td>11 million</td>
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<tr>
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<td>10 million</td>
</tr>
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Migration of "Vikings"  
800 AD – 1100 AD

Expansion of Slavs  
500 AD – 800 AD

For other maps, see http://www.goggo.com/terry/HaplogroupI1/