

Jewish men in the most common European Y-DNA haplogroup: a new narrative for Jewish R1b

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In 2000, at the dawn of DNA testing for genealogy, the only direct-to-consumer tests available were uniparental – examining the direct lineage through the father’s father’s father’s father, etc. (Y-DNA) and through the mother’s mother’s mother’s mother, etc. (mitochondrial DNA). What we now think of as the “standard” DNA tests (autosomal) that are sold by Ancestry, 23andme, FamilyTreeDNA, MyHeritage, and others did not exist. Those of us who were early adopters, hoping to confirm or refute our surname research, paid fairly large sums of money for our then-state-of-the-art 12-STR-marker tests and waited anxiously for the results. (STR is an abbreviation for Short Tandem Repeat; a pattern of repeating nucleotides, such as “AGAT”.)

At that time, precious little information was online or in published research papers about Y-DNA. In 1997, Prof. Karl Skorecki had led the well-known study that identified the CMH (Cohen Modal Haplotype) as 6 specific STR markers in the J1 haplogroup. (A haplotype is an individual’s genetic markers; a haplogroup is a group of men who share a common male ancestor, whether recent or remote in time.) The outlines of Y-DNA geographic distribution had begun to emerge, revealing that the most common haplogroups for Jewish men were J1 and J2. The science was in its infancy, but there was the promise of using Y-DNA to understand human migration.

I ordered my first two Y-DNA tests from FamilyTreeDNA (FTDNA) in 2000 to compare someone in my family with another Jewish man carrying the same surname. They did not match. It was a relief, as I had done painstaking research on this rare surname, and the test relieved me of the need to figure out how this other man fit into my tree. Curiously, FTDNA placed my family member in haplogroup R1b – the most common haplogroup in western Europe among non-Jews. In the British Isles, for example, the percentages of R1b men in Scotland, Ireland, and Wales top out between 70% and 92%.

I knew that my family member’s paternal ancestors had lived in Germany in the seventeenth century, and at that time the conclusion I drew was that his paternal-line ancestors were of non-Jewish European descent and had perhaps been recent converts to Judaism.

The FTDNA Jewish R1b Project

In 2005, a volunteer named Sean Silver started the Jewish R1b project at FTDNA, and in March 2006, an associated Jewish R1b Yahoo group. The project collected many Jewish R1b men together, but the state of the science hadn’t changed much. We would have to wait until 2013 for the tools that would help us understand the much more complex story of Jewish R1b: FTDNA’s first version of the Big Y test, using Next Generation Sequencing (NGS) to scan millions of locations on the Y chromosome.

The data gathered from the results of thousands of men’s NGS tests from FTDNA and other testing companies were used to construct a detailed phylogenetic tree (a “genetic” family tree). Since that time, as more Jewish R1b men undertake NGS tests, we continue to gain insight into the many Jewish lineages that form their own sub-branches. In 2017, I joined as a co-administrator of the Jewish R1b Project at FTDNA, using my experience in several other projects to help reorganize the project into major haplogroups and subclades and to try to make sense of the diversity that is Jewish R1b. (A subclade is a branch of a haplogroup where a defining mutation has created a subgroup with a most recent common ancestor more recent in time than the formation of the original haplogroup.)

What are Jewish Y-DNA lineages?

Inheritance of Jewish identity has traditionally been matrilineal (through the mother’s mother’s mother’s line). So what does it mean to belong to a Jewish Y chromosome lineage (patrilineal ancestry)?

Every Jewish male line came into the Jewish community at some specific place and time, whether its genetic patriarch was Abraham, the husband of one of Moses’s relatives in the desert, or a citizen of the Roman Empire living in Spain in the beginning of the Common Era. Over the millennia, Jews have lived in every part of the known world and men have been born into the tribe or come as converts and travelers. Some stayed while others may have left male children behind. Because of the long history of Judaism and the breadth of the diaspora, it’s no surprise that there should be a fair amount of diversity in the Y chromosome haplogroups of Jewish men living today.

Each Jewish lineage is a group of living men who share a common paternal ancestor. In nearly every case, the most recent common ancestor (MRCA) of Jewish lineages lived at least 1000 years ago. This is not to say all Jewish lineages began in the year 1000 CE, but rather that these are the surviving lines. All the parallel lines that would otherwise exist (e.g. descendants of the brothers of the MRCA) were eliminated from the population by a series of catastrophes since 1000 CE: the Black Death, the Crusades and their consequent pogroms, the Inquisition, and the Holocaust. These incidents create population bottlenecks, where large numbers of genetic lines are wiped out and the surviving lines become the founders of our current population.

Known Jewish clusters within major R1b subclades

The haplogroup that used to be known as R1b is now more commonly known as R-M343, named for the mutation that originated about 20,000 years ago in western Asia. By the Bronze Age (about 5000–3000 years before present) the male descendants of this lineage had migrated west from the Pontic Steppe and largely replaced the other haplogroups that had dominated western Europe thousands of years before. There has been some controversy over how this replacement occurred, whether it was due to this population's (possibly the Yamnaya) use of horses for transportation and their metal weapons, or some other reason. A recent article posits that they brought black plague with them from Asia, which may have wiped out a significant amount of the population.¹

Whatever the reasons, R-M269 (a subclade or descendant of R-M343) now represents more than half of the male population of western Europe. It's beyond the scope of this article to discuss all the recent discoveries and theories about the prehistory and migration of R-M343 and more specifically R-M269 men, but I've provided references at the end of the article for those who want to pursue this further. For now, I'll focus on the parts of R-M343 that have major Jewish lineages.

Most generalizations made by scientists about ancient migration are based on a large number of DNA samples taken from living individuals and very small numbers of samples taken from ancient bones. Consequently, we must keep in mind that present-day distributions of haplogroups don't necessarily correspond to ancient distributions. In addition, assumptions about the stability of populations in Europe over the past 500–2000 years are embedded in all current theories. While the agrarian populations of Europe have indeed stayed mostly geographically stable, we know that the Jewish populations are the exception. The vast majority of men descended from Jewish lineages that lived in eastern Europe for the past 300 years before the Holocaust were not in the same locations 500 years ago, much less 1000 or 2000 years ago. Consequently, we use these more stable agrarian populations that have a common ancestor with Jews as a kind of pushpin in the map to hazard a guess as to when those Y chromosome lines came into the Jewish population.

The Jewish R1b Project public display site (<https://www.familytreedna.com/public/JewishR1b?iframe=ycolored>) serves as a rough guide to the R1b subclades that have Jewish lineages. The project is organized by known or estimated subclades, grouped and color-coded to show the relationships among subclades of the same main haplogroup. The colored label "ribbons" show each subclade's path from its main upstream (farther back in time) haplogroup. (An upstream haplogroup is the larger (older) haplogroup of which a particular SNP is a subset or more recent branch ("child"). For example, R-P312 is upstream of R-DF27, meaning it's a kind of "parent" group for DF27. Everyone who is DF27+ is by definition P312+, but not vice versa. Anyone positive for any subclade SNP must also by definition be positive for every upstream haplogroup.)

The two dominant subclades of R-M269 in western Europe are U106 and P312. These two roughly correspond to northern Europe and southern Europe, respectively. U106 is most common in present-day non-Jewish populations of the British Isles, Germany, the Netherlands, and southern Scandinavia. P312 is most common in present-day non-Jewish populations of Spain, Portugal, France, Italy, Switzerland, and southern Germany. Jewish lineages are well represented in P312, the subclade that corresponds roughly to the Mediterranean areas. There are only a few Jewish lineages in U106, the more northern of the two main subclades.

Subclades of P312 with significant numbers of Jewish lineages are DF27 (most common in Spain, Portugal, and their respective former colonies), and U152 (most common in Italy and Switzerland).

In addition to the two dominant subclades of M269 (U106 and P312), there is a significant Jewish presence in several upstream branches, known as "basal" subclades because they branch off at the base of M343. This branching occurred in ancient times, between 5000 and 10,000 years before present. Basal subclades with substantial Jewish presences are: PF7562 (about 5500 years before present), Z2103 (about 6000 years before present), and V88 (about 10,000 years before present).

PF7562 has what appears to be one of the largest of the subclades of an R1b basal haplogroup: A11711 (M343/P25 >L754>L389>P297>M269>PF7562>PF7563>A11711). PF7562 is most common in the present day in the Balkans and the Mediterranean (e.g. Greece, Italy). The subclade A11711 appears to be exclusively Jewish.

Z2103 (M343/P25 >L754>L389>P297>M269>L23>Z2103) has the largest number of divergent subclades with Jewish lineages. Z2103 is most common in present-day Turkey, Armenia, the Middle East (Iran, Iraq), and the Mediterranean.

V88 (M343/P25 >L754>V88) is most common in some parts of Africa and the Middle East.

Conclusion

Twenty years ago, a haplogroup estimate of R-M343 or R-M269 was assumed to be a marker of non-Jewish paternal ancestry. With new scientific tools, we now know that, instead, it might indicate descent from any number of known Jewish lineages, small and large, with probable ancient origins in the Middle East, western Asia, Africa, or the Mediterranean. These geographic origins are all consistent with ancient Jewish history and migration, not indications of the large-scale introduction of recent northern or eastern European Y-DNA into the modern Jewish population.

The Jewish R1b Project at FTDNA is the central locus for collecting and exploring the various R1b lineages and volunteer administrators who can offer expert advice on the most efficient tests to determine which lineages each Jewish R1b belongs to. In addition, the Jewish R1b Project encourages and helps with spin-off sub-projects to study more specific subclades. The only way to determine which lineage a Jewish R1b man belongs to is advanced Y chromosome testing to find the most specific, recent haplogroup downstream of R-M343 or R-M269. (A downstream haplogroup (subclade) is a smaller (newer) haplogroup that a particular SNP defines as a more recent branch of a larger, older haplogroup. For example, R-DF27 is downstream of R-P312, meaning it's a kind of "descendant" haplogroup of P312. P312 has many distinct downstream haplogroups, such as U152, L21, etc.)

My Jewish R1b relative turned out to belong to a subclade of DF27, the most common haplogroup in Spain and Portugal. An in-depth study revealed a probable Sephardic ancestry for this Jewish lineage, the results of which we published in 2016.²

Further reading

Jewish R1b DNA Results Grouped by Subclade (Not all member results will be visible to non-project-members because of privacy settings): <https://www.familytreedna.com/public/JewishR1b?iframe=ycolorized>

Background on the migration and pre-history of R1b: https://eupedia.com/europe/Haplogroup_R1b_Y-DNA.shtml

General background on R1b: https://en.wikipedia.org/wiki/Haplogroup_R1b

YFull's R1b Haplotree with time estimates of the origins of subclades: <https://yfull.com/tree/R1b/>

FTDNA's R1b Haplotree: <https://www.familytreedna.com/public/y-dna-haplotree/R;name=R-M343>

R1b Basal Subclades Project: <https://www.familytreedna.com/groups/r-1b-basal-subclades/about/background>

More detailed technical background on Jewish Paternal Lineages, haplogroups, and SNPs: Seattle IAJGS 2016 Conference Presentation Screencast by Rachel Unkefer. <https://youtu.be/asSBREbwy0>

Rachel Unkefer is a genetic genealogist and co-administrator of 8 DNA projects, including 4 haplogroup projects (I-P37, R-FGC20747, Jewish R1b, R-A11711), 2 geographic projects (Jews of Frankfurt, Suwalki-Lomza Jewish) and the Bacharach and Worden surname projects. She has more than 30 years' experience in genealogy, specializing in early American Jewish research, German-Jewish research, and Y chromosome migration studies. She has published several articles about Y-DNA and has spoken at conferences around the world on various genetic genealogy topics.

NOTES

1. Andrew Curry. "The first Europeans weren't who you might think: Genetic tests of ancient settlers' remains show that Europe is a melting pot of bloodlines from Africa, the Middle East, and today's Russia". *National Geographic*, August 2019. <https://www.nationalgeographic.com/culture/2019/07/first-europeans-immigrants-genetic-testing-feature/>
2. Rachel Unkefer, J. B. Royal and Wim Penninx. "Y-DNA Evidence for an Ashkenazi Lineage's Iberian Origin". https://www.academia.edu/25638614/Y-DNA_Evidence_for_an_Ashkenazi_Lineages_Iberian_Origin.