

# Can DNA Testing Confirm Jewish Ancestry?

by Bennett Greenspan

People often ask, “Can DNA tell me if I am Jewish?” The answer, of course, is “no,” since DNA shows genetic history while religion refers to one’s current belief system. If, however, the question is reframed as, “Can DNA reveal if someone has Jewish ancestry?” then the answer is “yes”—under some circumstances, each involving the analysis outlined below.

To demonstrate Jewish ancestry, two elements are necessary:

- A robust comparative database of known Jews complete enough to be considered representative of all members of that Jewish group, that is, Ashkenazi, Sephardi or Mizrahi

- A test taker whose DNA matches a lineage that is only or nearly completely Jewish.

A large number of individuals with no knowledge of Jewish ancestry (though perhaps a hint like such as a “Jewish-sounding name” or “being Hispanic” have found matches because the FamilyTreeDNA database of Ashkenazic Jews (and, to a lesser extent, Sephardic Jews) is so complete. One of the four following possible situations may apply when someone asks about possible Jewish ancestry.

## Person Matches Only Individuals Who Also Are Jewish On Their Direct Maternal or Paternal Lines, (If the Test Taker is a Male)

In other words, the DNA pattern matches only people with known Jewish ancestry. In such a case, the answer to our question is clear and obvious. The test taker has Jewish ancestry. This also applies, of course, even to those with no knowledge of Jewish ancestry. FamilyTreeDNA has a surname project, the so-called WIRTH group, composed of 55 men who match exactly. Of these 55 men, 45 are Jewish today; 9 are not Jewish but know that they have a Jewish ancestor on that direct male lineage. One member of the group, a man named Rosa who lives in Puerto Rico, has no knowledge of a Jewish ancestor, but his match is so close at such a large number of DNA markers, that he clearly shares a common Jewish ancestor with the other 54 members of the group.\*

## Person Matches Both Jews and Non-Jews

In such a situation, the results are inconclusive. The standard, 12-marker DNA test yields results cannot determine whether or not an individual has Jewish ancestry. Upgrades to a greater number of Y-DNA markers frequently are helpful and sometimes conclusive. Because additional testing with more markers usually shows the group that the individual matches most closely (think of a “group” as representing a genetic gene pool such as Africans, Native Americans or Jews) and, thus, the group to which the indi-

vidual probably belongs on the direct line that is testing.

## Individual Matches No One of Known Jewish Ancestry

With these results, the individual likely does not have Jewish origins on the lineage tested—if the testing was done with FamilyTreeDNA. (If Jewish, the matches will say “Ashkenazic,” “Sephardic” or “Mizrahi” in the comment field.) FamilyTreeDNA databases come from two sources. One set reflects the academic research conducted by molecular anthropologists Dr. Doron Behar and Dr. Michael Hammer. Substantially, all of the data from all of the papers of these two renowned anthropologists is included in the comparative database. Enhancing these databases is the FamilyTreeDNA client database—approximately three times larger than the one created by the academics. Behar and Ham-

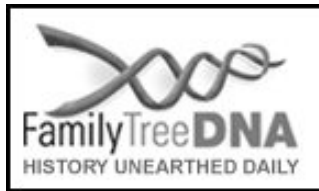
mer believe that their databases contain 90 to 95 percent of all the Ashkenazic lineages. As the company database has grown, we believe that we have found most of the rest. For this reason, testing with FamilyTreeDNA can yield Ashkenazic results with nearly 100 percent certainty that an individual who does not match anyone with Jewish ancestry does not come from a Jewish genetic gene pool.

## Individual Has No Matches in the FamilyTreeDNA System

This would be a case in which a test taker sends his DNA sample to FamilyTreeDNA and the results are unique. This scenario is scientifically and historically interesting, poorly understood and the most frustrating of all potential outcomes when testing one’s DNA. Fortunately, it also is rare. The DNA pattern is not in the company’s database; it is one that has never before appeared. It is unique. The basic question the test taker asks is, “Why is my DNA so uncommon?”

Some discussion of population genetics is necessary in order to answer this question. Each lineage in any and every population is either very common, very rare or somewhere in between these two poles. Some lines have been very successful breeders; all the girls or all the boys eventually married and had many offspring—enough of each to pass on their Y (for males) or their mtDNA (for females) and of their autosome (the DNA from our other 22 chromosomes) for everyone. Some families, however, have one son or one daughter that (a) does not marry, (b) marries and has no children, or (c) marries and has children, but no children of their gender so that their Y-DNA or mtDNA does not pass down to the next generation.

The situations described above comprise the entire potential picture, and every one of us falls into one of the three categories described (very common, average, or



unique). Nevertheless, when FamilyTreeDNA finds no matches, one might ask, “Did no other relatives come to the United States?” “Are none of them interested in DNA testing?” “Is the lineage rare because all relatives died in the Holocaust?” “Might they be Crypto-Jews today?” For cases in this category, additional upgraded testing adds nothing to one’s knowledge, since it still would be impossible to say from which group the closest relatives came.

**Note**

\*For a description of the WIRTH research, see Herbert Huebscher and Elise Friedman, “DNA and Jewish Genealogy Join Forces,” AVOTAYNU, Vol. XXIII, No. 2, Summer 2007.

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*Bennett Greenspan spent years investigating the ancestors of his maternal grandfather, an obsession which eventually led to the founding of FamilyTreeDNA in 2000 and the beginning of a new kind of genealogy, the burgeoning field now known as genetic genealogy. FamilyTreeDNA is the world leader in the field of genetic genealogy exploration. With more than 195,000 records, FamilyTreeDNA has the largest database of its kind in the world. Greenspan who lives in Houston, Texas, is now also involved in DNA-Traits.com, a new medical genetic testing company.*

**WIRTH DNA Research  
In New Directions**

The WIRTH family research group is contemplating a major research effort in a new direction, namely attempting to find a trail back to a common ancestor through DNA testing, archives research, and “on the ground” genealogical investigation. Several persons, both within and outside the group, have suggested that it might be possible to find such a trail by tracing back in time the ancestry of the Rosa family in Puerto Rico (one of our 55 WIRTH families).

Of the 55 families in our group, 45 are currently Jewish. Of the other ten, nine know of their Jewish paternal ancestry. Only in the case of the Rosa family did this Jewish ancestry come as a complete surprise. Yet we can be certain, based on the DNA data, that we share a common paternal ancestor within the last several hundred years. The reason for focusing attention on the Rosa family’s trail back in time is that records might exist in Puerto Rico and Spain that could take the family back hundreds of years along the family’s ancestral trail—a trail that could possibly identify our Most Recent Common Ancestor (MRCA)—or at least tell more about him, and about all our ancestry. Our present thinking is that this would involve:

- DNA tests of a large number of families with the Rosa surname in Puerto Rico and possibly the Dominican Republic
- Interviews of those individuals whose DNA results match with those of our Rosa family
- Research in Puerto Rico of available birth, baptismal, and other church records

- Research in the Spanish Archives of parallel records going back in time.

Sonia Rosa, daughter of the man whose DNA matches the other WIRTH group members, has stated her whole-hearted support, and they have been in discussion with leading specialists in directly related genealogical research who have indicated considerable interest and willingness to take part, and, in fact, play a leading role in such an endeavor.

*Herbert Huebscher*

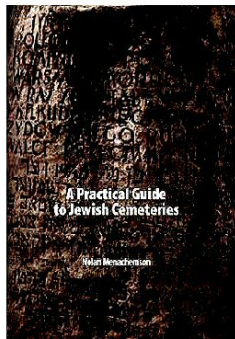
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