

# Preliminary Results of Sephardic DNA Testing

by Alain Farhi

This paper reports on the results of a Y-DNA project on Sephardic Jewish males to determine their pre-Expulsion (1492) regions of ethnic origins and links among several Sephardic families of the Ottoman Empire. The project, sponsored by the International Institute for Jewish Genealogy and Paul Jacobi Center, is a subset of a larger Sephardic DNA study being conducted by Family TreeDNA of Houston, Texas, in conjunction with Dr. Doron Behar of the Ramban Medical Center in Haifa and Professor Michael Hammer at the University of Arizona with a view to complement DNA analysis already done on Ashkenazic men. The primary objective of the larger study is to analyze migration of Spanish Sephardim through Greece and the Ottoman Empire. A corollary aim is to determine the common ancestry of members of *Les Fleurs de l'Orient*<sup>1</sup>

As creator of *Les Fleurs de l'Orient* and a member of the Board of Directors of the Institute, this author provided most of the names of the families to be included in the study. Leon Taranto of Washington, DC, submitted several additional names; Mario Modiano of Athens, Greece, and Moshe Sourojon of Rehovot, Israel, supplied additional individuals of known Spanish origin. More recently, several participants have joined the project after discovering its existence through the Institute's homepage (WWW.IIJG.ORG) and the Family Tree DNA website (WWW.FAMILYTREEDNA.COM). FamilyTree DNA provided the DNA kits, and laboratories at the University of Arizona processed them. The resulting data for each individual and group are shown in their database, which is accessible through the web at WWW.FAMILYTREEDNA.COM/PUBLIC/SEPHARDIC\_HERITAGE.

We identified pairs of people who are descendants of Jews from Spain and who had the same family surname, but not necessarily the same tree or branch, and gathered DNA from them. These DNA tests clarified family relationships, put to rest speculation about a linkage between members of different branches and confirmed, in some cases, the existence of a probable common ancestor. The sample population included 54 individuals with 27 surnames. Region of Ethnic Origins analysis showed that 13 percent came from Western Europe with the balance from the Semitic, Middle East and Central Asian origin. The study revealed 13 pairs of related people and 5 of non-related people with the same surname. One person showed a close relationship with a pair of individuals who did not have the same surname.

## Results: Migration

Common genetic research practice groups individuals with similar Y-DNA markers. Each group is called a *haplogroup*.<sup>2</sup> Based on a 12-marker test, the distance between

two individuals is measured by the number of mismatches in their DNA sequences. A zero distance indicates a perfect match (12 of 12). People with identical markers are grouped in haplotypes.<sup>3</sup> The Sephardic sample of 27 unique surnames has found the following distribution of Region of Ethnic Origins (ROC). In certain cases, when an individual's markers were close enough to the haplotype, FamilyTreeDNA has projected these ROCs. In the following table, we listed the percentage of each haplogroup in the total population.

Last Name	Haplogroup	Region	Total	%
Capouya	E3a	Africa, England	1	2
Douek	E3b	Semitic		
Dwek	E3b	North Africa		
Gubbay	E3b			
Marshall	E3a			
Marzouk (2)	E3b			
Modiano (2)	E3b			
Rouso (3)	E3b			
Russo	E3b3a		12	22
Alhadeff (2)	G	Semitic and Central Asian		
Cabbalero Ben-Abir	-	Armenia & Ossetia		
Cabbalero Ben-Abir	G2			
Cavaliero	G2			
Farhi Bulgaria (3)	G			
Taranto (3)	G		11	20
Anzaroot	J1	Iran, Iraq & Syria		
Anzarut	J			
Anzaruth	J	Semitic		
Chiprut	-			
Chityat	J2			
Harlow	J2			
Jazan (2)	J2			
Lisbona (2)	J			
Pizanti (2)	J			
Reuven	-			
Yossef	-		14	25
Aruh	K2	Middle East (Phoenician)		
Codron	K2			

Last Name	Haplogroup	Region	Total	%
Constantini	K2			
Farhi Syria (2)	K2	Lebanon	5	9
Farhi	Q	Central Asia, Iraq		
Bekhor	Q3-		3	5
Constantini	R1b2			
Gubbay	R1b1	Western Europe		
Laby	R1b1			
Serrano	R1b1			
Solomon	R1b1c			
Suroujon (2)	R1b1		7	13
Chitayat	R2	Central Asia, Iran	1	2
<b>Total</b>			<b>54</b>	

### Migration Map

National Geographic has created a migration map for Mr. K. Bekhor (haplogroup Q). It shows a migration from Africa to the Middle East and Iraq and onwards to Siberia. In the Bekhor case, his ancestors settled in Iraq after a known stay in Aleppo in the 17th century.

People in the same haplogroup often have similar ancestral origins. Dr. Behar has found that 10 percent of both Ashkenazim and Sephardim belong to the G haplogroup. The R1b haplogroup accounts for another 10 percent of the Ashkenazim and 13 percent of the Sephardim. The J haplogroup commonly is found among Middle Eastern Jews whose ancestors came from Spain after the Edict of Expulsion.

### Results: Common Ancestry

The Y-DNA tests identifying the possible link between people of the same surname have shown the following links between the participants.

Name	Country	#	Re-related	Comments
Alhadeff	Greece	2	Yes	
Anzarut	Syria	3	No	2 related to each other, one unrelated
Aruh	Turkey	1	-	To Farhi Syria
Bekhor	Iraq	2	Yes	
Capouya	Turkey	1	-	Waiting for another Capouya
Cavaliero	Turkey	3	Yes	
Chiprut		1		
Chitayat	Iraq	2	No	
Codron		1	-	
Constantini	Italy	2	No	
Douek	Syria	2	Yes	Also to Modiano

Name	Country	#	Re-related	Comments
Farhi	Bulgaria	3	Yes	Not related to Farhi Syria
Farhi	Syria	2	Yes	Not related to Farhi Bulgaria
Farhi	Tunisia	1	-	Not related to Farhi Syria & Bulgaria
Gubbay	Syria/Iraq	2	No	
Harlow	Iran	1	-	Iran
Jazan	Rhodes	2	Yes	
Laby	Spain	1	No	
Lisbona	Syria	2	Yes	
Marshall	Iraq	1	-	
Marzouk	Egypt	2	Yes	Karaites
Modiano	Greece/Italy	2	Yes	Also to Douek
Pizanti	Turkey	2	Yes	
Reuven		1		
Russo	Greece	4	Yes	
Solomon	Greece	1		
Serrano	Honduras/Spain	1	-	Waiting for another Serrano
Souroujon	Turkey/Bulgaria	2	Yes	
Taranto	Turkey	3	Yes	
Yossef	Iraq	1	-	
<b>Total</b>		<b>54</b>		

Following are some comments on these family relationships and search for their Most Recent Common Ancestor (MRCA).

**Alhadeff, Bekhor, Douek, Lisbona, Modiano, Souroujon, Rouso, Cavaliero, Marzouk and Taranto.** Descendants of these families are indeed related to each other. The Modiano and Dwek families also have shown a probable common ancestor.

**Anzarut.** From the three Anzarut, two are related and one turned out to be unrelated.

**Aruh.** The Aruh case was brought into our study because of a perfect match with the Farhis of Syria.

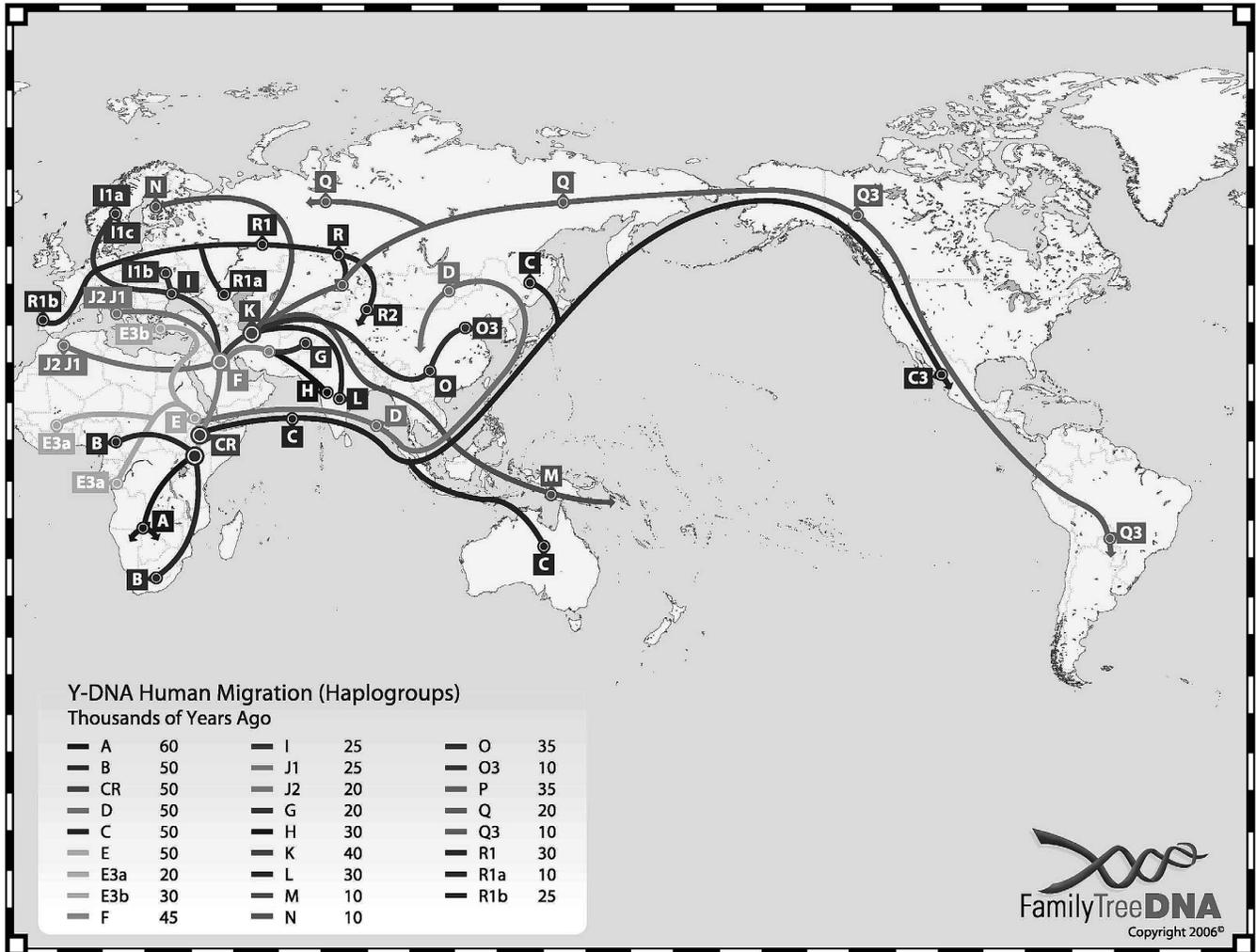
**Capouya :** The DNA Test on another Capouya has not been received yet. When processed, we may find out if the two Capouya are related.

**Chitayat.** The two Chitayat turned out to be unrelated.

**Constantini.** The two Constantini turned out to be unrelated. One had a Western European haplogroup and the other had a Middle Eastern one.

**Gubbay.** The two Gubbay turned out to be unrelated

**Harlow.** Harlow joined our study because his DNA was from the Middle East. His biological father was indeed from Persia.



**Laby.** Laby was added after his name was suggested to be a Cavaliero. We do know that one Laby (de Caballero)'s ancestors came from the Lerida/Lleida area, about 140km NW of Barcelona. Usually the Caballero is a "noble" title bestowed on the family. That Laby turned out not to be related to the other Cavaliero.

**Pizanti :** The two Pizanti men are indeed related.

**Farhi.** The sample included two distant Farhi cousins from Syria, one From Tunisia and three from Bulgaria. The Syrians showed a distance of one between themselves which allows for a single gene mutation and is nearly the same as a perfect match. The three Bulgarians showed a perfect match indicating a common (unknown) ancestor. The two Syrians and three Bulgarians, however, had no link to each other. The Tunisian Farhi had a haplogroup similar to the Sephardim from Mesopotamia and showed no common ancestry with the other Farhi. The discovery that the Bulgarians are unrelated to the Syrians disproved the theory that all Farhis are descended from the same Farhi brothers in Spain. Many men in Algeria, Morocco, Pakistan and Iran

of the Muslim faith are named Farhi. These families are known to be unrelated to the Jewish ones. In addition, testing revealed a distance of one between the Syrian Farhis and Aruh, an indication that they shared a common ancestor at a time before surnames were adopted, or that the name was changed for other reasons. The immediate conclusion is that all the Farhis living today may not be automatically related to each other.

**No Relationship.** In the few cases where individuals share a similar family name but had no common ancestor, one may wonder if this is not due to one of the following reasons:

- The surname is linked to a location like the Anzarut (Ein Zarut) where both individuals lived
- The surname is linked to a profession like the *gubbay* (treasurer of the synagogue)
- One ancestor took the name because it had more status in the community
- One ancestor was adopted by a family and later carried their name. This event is most likely if a widow with chil-

dren remarried and the name of her children were formally changed

- One ancestor had married into a family and kept the spouse's name. That practice was common in Iraq when a spouse's name was more "famous"
- One ancestor changed from a first name to a last name
- Extra marital affairs (unlikely but theoretically possible)

### Signatures

A statistical study of the Y-chromosomes among a large number of Jewish individuals in Europe has found 10 clusters of DNA (mostly Ashkenazim). These are called "signatures." In our Sephardic study, we have found 17 unique signatures, indicating that Sephardim have more genetic diversity than do Ashkenazim. The possible reasons for the greater diversity among the Sephardim are complex and the subject for another, separate article. These signatures cover all of the typical haplogroups found among the Ashkenazim except for R1a, which was non-existent in our sample.

A unique signature is an indication that some men were not related to a particular community where other signatures were prevalent. They may have immigrated into that community and/or were converted to Judaism (as was common in Roman times for freed slaves of Jewish families).

### Conclusions

From the data collected by our sample population, we have learned a few clues about the Region of Origins and relationships among each other. In the narrow view of the author's involvement with family relationships, more DNA tests among members with the same surname should be conducted to identify new branches. We may need to add descendants of families whose ancestors are positively known to come from Spain either because of their name or documents that prove that their ancestors lived in Spain. We could also expand DNA tests on the current population of the Sephardic Heritage Study to 25 markers. Analyses of 25 markers should determine with greater accuracy the Region of Ethnic Origin and time of that occurrence. mtDNA testing could also be done to determine maternal ancestry.

One major question remains: Did the ancestors of those with Middle Eastern haplogroups really migrate to Spain (in the first millennium) and then emigrate to the Ottoman Empire after the Spanish Inquisition, or were they living in the Middle East all the time?

Our data remains to be analyzed by the researchers from Haifa University and the University of Arizona and used in context of their larger database. Their conclusions are expected later in 2007.

### Notes

1. *Les Fleurs de l'Orient* (WWW.FARHI.ORG) is a website of many families within the Ottoman Empire and beyond. It

began as the genealogical homepage of the Farhi family, but has grown to embrace many linked families from Europe, the Middle East and Asia, currently numbering more than 80,000 families and 120,000 names. The majority of these families are Sephardim, Ashkenazim and Karaites, plus some Christians and Moslems.

2. Haplogroups are branches in the Y-DNA genetic tree and often are tens of thousands of years old. Everyone in the same haplogroup ultimately descends from the same common ancestor whether recently or more than 10,000 years ago.

3. A set of marker results for an individual is called a *haplotype*. If two individuals share the same haplotype, they likely share a common ancestor. Individuals of similar haplotypes often belong to the same haplogroup.

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*Alain Farhi is a businessman with a passion for genealogy. When his business in Singapore allows him some spare time, he grows The Fleurs de l'Orient in cyberspace. He started tracking the Farhi families in the early 1980s and now covers many families of Middle East origins and beyond. Farhi is a Director of the International Institute of Jewish Genealogy (IJG), whose primary goal is to develop Jewish genealogy into a recognized academic discipline. He is responsible for the IJG-sponsored and financed Sephardic DNA Heritage project. Farhi has lectured frequently on genealogy, privacy and DNA issues. Born in Egypt, educated in France, he chose the United States as his country of adoption.*

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