

# THE MODIANO DNA PROJECT

I regret to inform you that the Modiano DNA project launched by the Rome University "Tor Vergata" during our family reunion in Salonika in June 2007 has been discontinued because of the lack of funds. The cost of the initial phase was borne by the University itself from its research budget. However efforts by the University's research team and our own family in the course of 2009 to secure further financing were not successful. Professor Andrea Novelletto and Assistant Professor Bianca Maria Ciminelli who are in charge of the project, informed us that the University was still willing to continue the project informally. This would involve DNA tests on an individual basis. If a sufficient number of Modiano males agree to apply, the project could continue. Details of the research team's proposal can be read by clicking [here](#). For more details please contact Mario.

A project to study by DNA whether or not the male members of the Modiano family share a single male common ancestor was launched in Salonika during the second international reunion of the family in June 2007.

The project was set in motion by Guido Modiano (professor of human genetics at the University of Rome "Tor Vergata"). It was planned and organized by the principal investigator Andrea Novelletto (professor of genetics in the same university), assisted by a team of qualified expert academics.

The original proposal explained:

*“One of our chromosomes, the Y-chromosome<sup>1</sup>, is genetically inherited in a fashion similar to our surname, i.e. from a man to all his sons, and from those to their sons and so on. With modern molecular genetics it is possible to recognize that the Y chromosome of a particular male is not exactly identical to the Y chromosome of another male (except his son or grandson). These subtle differences can be considered in much the same way as a "genetic surname" that can be used to group together males whenever this is identical and to distinguish other males carrying different versions.”*

In Salonika, samples were taken from 19 male Modianos taking part in the reunion as well as from 4 non-Modiano participants.

The first report on the study sums up the findings as follows:

*“For the time being, the results strongly point to a single male ancestor for the 19 subjects analysed. Nevertheless, since the number of individuals studied is too small, it is not possible to accurately estimate how many generations ago the common ancestor lived.”*

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<sup>1</sup> One must keep in mind that in the genetic contribution of a male ancestor to his male descendants, while the Y-chromosome remains unchanged, the non-Y chromosomes are halved at every generation, merging with the maternal contribution. For example, if the founder of the Modiano genealogy lived 20 generations ago, the present Modianos would all still share with him (and between them) the entire Y-chromosome, but would have in common with him only ca.  $1/1,000,000$   $(1/2)^{20}$  of their non-Y chromosomes.

The team therefore announced plans to expand the study to include a greater number of Modianos, as well as other subjects with related surnames, such as Modigliano and Modigliani. This further study was conditional on the approval of a grant that had already been requested, but did not materialize.

The first report indicated that the 19 volunteers belonged to branches B1c, E1, E2 and B1e of Mario Modiano's genealogy tables. Only subjects who were not more closely related than first cousins were used in the analysis. There were at least two such subjects from each of the above- mentioned branches.

The study sought to establish the genetic relationship between them, first in the context of their family branch, then between the branches. If all the subjects tested had the same "haplotype"<sup>2</sup>, they should most probably be considered the male descendants of a single common ancestor. The findings were compared to those of 83 other Sephardim whose Y-DNA was tested by Family Tree DNA <http://www.familytreedna.com/> (see next chapter).

The samples from 18 of the 19 members of all four branches show that:

- In all cases subjects within the same branch share the same haplotype, i.e. their Y chromosomes are identical by descent (namely, the Y chromosomes of these subjects all derive from the Y chromosome of the single common ancestor of the corresponding branch);

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<sup>2</sup> The term haplotype indicates the particular set of genetic characteristics that are searched in the Y chromosome of a subject and may be useful in distinguishing his chromosome from that of other subjects analysed in the same way.

- All the subjects of 3 of the 4 branches had identical Y chromosome haplotypes. Therefore all the three branches had a common ancestor;
- In those of the fourth branch the haplotype differed by 1 over 19 loci tested. This does not exclude that they too had the same common ancestor as the first three branches, but shows the occurrence of a mutation<sup>3</sup> at least four generations ago (because the common male ancestor of these subjects lived four generations ago [according to Mario's tables]).
- Two additional mutations were detected in scattered individuals. This is not unexpected given the distant relatedness of the examined subjects. This shows that the Modiano study can also lead to conclusions of general validity concerning the phenomenon of mutations.
- One of the 19 sample donors belongs to a fifth branch [based on Mario's tables]. His haplotype showed differences in 3 out of 19 loci. These are so minor that he too may be considered as having issued from the original founder of the family, but his branch had had three mutations sometime in the past. The absence of a second member of this fifth branch does not allow more precise conclusions.

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<sup>3</sup> A mutation is a change in one of the genetic characteristics used to define the haplotype. If a mutation occurs in a father, his haplotype will be slightly different from that of his son who inherited the mutation. In the following generations this son will transmit the "new" genetic characteristic. In cases (like the ones found here) in which there is a father-son difference in a single characteristic out of many searched (19 in the present study), the son carrying the mutated Y chromosome continues to be recognizable as the son of his biological father.

- In the comparison between these results and those of the 83 Sephardim of the Family Tree DNA study, only one identifiable Modiano who had participated in that study, had the Modiano haplotype.
- The samples from the three non-Modiano subjects differed from the Modiano haplotype at between 12 and 18 out of 19 loci. This shows that the main Modiano and related haplotypes found in the study weigh heavily in determining membership to the Modiano male genealogy.

## The previous DNA Tests

The first scientific evidence that Modianos belonging to different but unconnected branches are related emerged in 2006 as part of a worldwide project to identify particular features in the DNA of the Sephardim, which was conducted jointly by the University of Arizona and “Family Tree DNA”, a major genetic testing service. Alain Farhi, the prominent genealogist of *Les Fleurs de l’Orient* <http://www.farhi.org/genealogy/index.html> was the coordinator of the project.

Samples were submitted by two Modiano whose branches had not been linked by the usual genealogical methods: Mario Modiano of E1 and Johnny Modiano of B1c. The aim was to establish by comparing elements of their DNA whether they had a single common ancestor. The result of this test indicated that Johnny and Mario had the same 11 out of 12 “alleles”. An allele is one member of a pair or series of genes that occupy a specific position on a specific chromosome.

**This means that there is a 50% chance the two have a common ancestor who lived 17 generations ago. This conclusion is consistent with the general assumptions found by genealogical research.**

According to this research, the earliest known common ancestor of our family is R'Samuel Modillano who was probably born about 1570 some 17 generations ago. Because of incomplete evidence, it is estimated that the most recent common ancestor of Mario and Johnny must have lived between nine and 15 generations ago.

The DNA study findings implied that Johnny and Mario belong to what is known as *haplogroup*<sup>4</sup> **E3b** which originated in East Africa in the Upper Palaeolithic (10,000-40,000 years ago) then expanded into the Mediterranean, western Asia and southern Europe/Italy. It may be significant that a comparison of Y-DNA tests on the database of Family Tree DNA has shown that in 683

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<sup>4</sup> Haplogroups are large groups of genetic populations that have comparable markers at specific locations of their Y-chromosomes