

The genetics of pre-Roman Iberian Peninsula: A mtDNA study of ancient Iberians

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Abstract. The Iberians developed a surprisingly sophisticated culture in the Mediterranean coast of the Iberian Peninsula from the 6th century BC to their conquest by the Romans in the 2nd century BC. They spoke and wrote a non-Indo-European language that still cannot be understood; their origins and relationships with other non-Indo-European peoples, like the Etruscans, are unclear, since their funerary practice was based on the cremation of the bodies, and therefore, anthropology has been unable to approach the study of this people. We have retrieved mitochondrial DNA (mtDNA) from a few of the scarce skeletal remains, preserved some of them belonging to ritualistically executed individuals. The most stringent authentication criteria proposed on ancient DNA, such as independent replication, aminoacid analysis, quantization of template molecules, multiple extractions and cloning of PCR products, have been followed to obtain reliable sequences of the mtDNA hypervariable region 1 (HVR1) as well as some haplogroup diagnostic SNPs. The phylogeographic analyses show that the haplogroup composition of the ancient Iberians was very similar to that found in modern Iberian Peninsula populations, suggesting a long-term genetic continuity since pre-Roman times. Nonetheless, there is lesser genetic diversity in Iberians than among modern populations, a fact that could reflect the small population size at the origin of the population sampled and the heterogenic tribal structure of the Iberian society. Moreover, the Iberians were not especially close to the Etruscans, which points to a considerable genetic heterogeneity in Pre-Roman Western Europe. © 2006 Published by Elsevier B.V.

Keywords: Ancient DNA; Mitochondrial DNA; Iberian Peninsula

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1. Introduction

The Iberian culture developed in the South and East of Spain along the Mediterranean coast from the 8th to 6th century BC (Fig. 1A). There are several distinctive traits of this culture: their non-Indo-European language, their society and their funerary practice (they incinerate their dead). In our study, we have retrieved mtDNA sequences from the few skeletal remains preserved trying to improve, from a genetic point of view, our knowledge about Iberian populations.

2. Material and methods

To get mtDNA sequences it followed the authentication criteria proposed on ancient DNA studies [1]. To get the sequences it made the following [2]: (1) DNA isolation from bones (phenol-chloroform extraction), (2) amplification in overlapping fragments, (3) UNG treatment (Uracil-*N*-Glycosylase), (4) cloning and sequencing.

3. Results

Both the real time experiment [3] and the degree of aminoacid racemization were suggestive to DNA retrieval. Table 1 summarizes the 13 different sequences found in the 17 samples analyzed. Populations included in the analysis are shown in Fig. 1B. The correspondence analysis (Fig. 2A) shows that Iberians were not significantly different from modern population from the same region. The mismatch distribution (Fig. 2B) shows that the Iberians have the least intrapopulation diversity.

4. Conclusions

- Long-term genetic continuity in the Iberian Peninsula since pre-Roman times. Iberian groups do not seem to be especially close to Basque and Etruscans populations [4].
- African lineages were not found. Iberians show the least intrapopulation diversity.

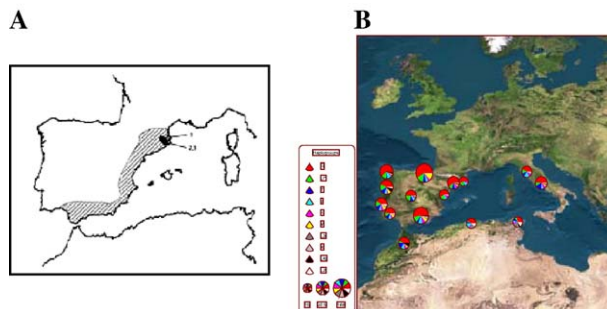


Fig. 1. (A) Area of expansion of the Iberian culture. Dots represent the archaeological sites where the studied samples were found. (B) Other population from the Iberia Peninsula, North Africa and Central Italy included in the analysis.

Table 1
Haplogroup attribution and HVRI haplotypes in ancient Iberians

Haplogroup	Sample	HVR1 haplotype	SNPs
H	1	16287	n.d.
H	5, 15	16126 16311	– 7025 AluI (#5), 7028 C (#15)
H	6, 11, 17	16126	7028 C, 3010 G, 13708 G
H1	7	CRS	– 7025 AluI, 3010 A
H1	9	16126	– 7025 AluI, 3010 A
H	12	16273	– 7025 AluI
Pre-HV	10	16362	7028 T, 147 66 C
J*	4	16126 16189	– 13704 BstNI, 3010 G
J*	16	16126	13708 A, 7028 T
K*	13	16224 16311	n.d.
T	8	16126 16294	n.d.
U4	2	16356	7028 T, 12308 G, 3010 G
U5*	14	16270 16281	n.d.
U5a	3	16256 16270	n.d.

n.d.: not determined.

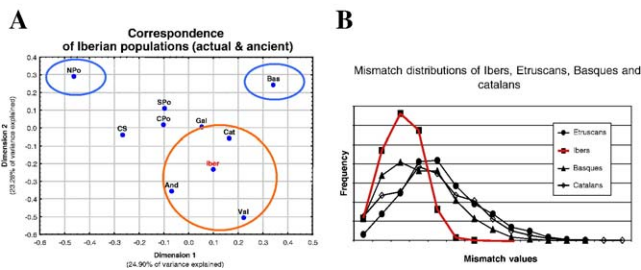


Fig. 2. (A) Correspondence analysis. In an orange circle, modern populations that inhabit the same region that had been inhabited by the Iberians. In a blue circle, the most divergent samples: Basques (R1; V) and North Portugal (L1; L2; U6). And: Andalusians; Bas: Basques; Cat: Catalans; CS: Central Spain; Gal: Galicians; Val: Valencians; NPo: North Portuguese; CPo: Central Portuguese; SPo: South Portuguese; Ibe: Ancient Iberians. (B) Mismatch distribution of Etruscans, Iberians, Basques and Catalans. Iberians show the least intrapopulation diversity.

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