



Genetic studies on the prehispanic population buried in Punta Azul cave (El Hierro, Canary Islands)



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ABSTRACT

The aim of this study was to establish the genetic studies of the population from one of the most important known aboriginal funerary spaces of the island of El Hierro (Canary Islands), the Punta Azul cave, which harbors remains of 127 individuals. Sixty-one adult tibiae were examined, 32 left and 29 right. Radiocarbon dating yields an antiquity of 1015–1210 AD. We have obtained an overall success rate of 88.5% for the molecular sexing, and of 90.16% for the uniparental markers. Short tandem repeats (STR) profiles were also possible for 45.9% of the samples. This performance is a consequence of the good conservation of the bones in their archaeological context. The mtDNA composition of the sample is characterized by the complete fixation of the H1-16260 lineage. These results can be explained by a mixture of consecutive founding events, a bottleneck episode at the beginning of the colonization and/or as a consequence of genetic drift. Paternal lineages were also affected by these processes but in a less acute way. These differences lead us to propose social behaviors as an explanation for this difference. The maternal transmission of the lineages, mentioned in ethnohistorical sources of the Archipelago, could be an explanation. These results could be in agreement with endogamous practices, but the autosomal STR results indicate a relative high diversity. These results have allowed us to characterize the Punta Azul cave population and see the way in which geographical isolation, the process of adaptation and specific social behaviors affected the aboriginal population of the Island.

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1. Introduction

The Canary Archipelago was the only one of the Macaronesia that was colonized before the arrival of the Europeans. As shown in Fig. 1 seven major islands constitute the Archipelago, all of them colonized in ancient times by north African populations. The Berber origin of this ancient population is undisputed, based on genetic (Rando et al., 1999; Maca-Meyer et al., 2004), archaeological and linguistic evidences (Tejera Gaspar, 1999; Jiménez Gómez, 1993; 2003). Whether this ancient colonization took place in a single event or in several arrivals, and whether the ancient population of the seven islands differed from each other, remains largely

unknown. In fact, at the time of the Spanish conquest (1402–1496) the aboriginal inhabitants of each of the islands received different names-bimbape for the population of El Hierro, guanches for the population of Tenerife, beneahoritas for that of La Palma, etc. (Tejera Gaspar et al., 2006). The island of El Hierro is the smallest one of the Canary Islands with a surface of 287 square kilometers and altitudes up to 1500 m above the sea level. El Hierro is the western-most island of the Archipelago, and therefore the most distant one to the African continent (Fig. 1). Chronichlers' reports during the conquest underscore the fact that there was no contact among the inhabitants of the different islands (Abreu Galindo, 1977). The most antique C 14 datation for the prehispanic population of the Archipelago is around the middle of the first millennium BC in Tenerife (Galván et al., 1999). In the remaining islands the dating of different remains yield antiquities around 1900 BP (Santana-Cabrera et al., 2011–2012). The oldest radiocarbon dates for the Bimbapes (name given to the aborigines of El Hierro) presence in the Island have been 120 ± 60 AD (1839 ± 60 BP)

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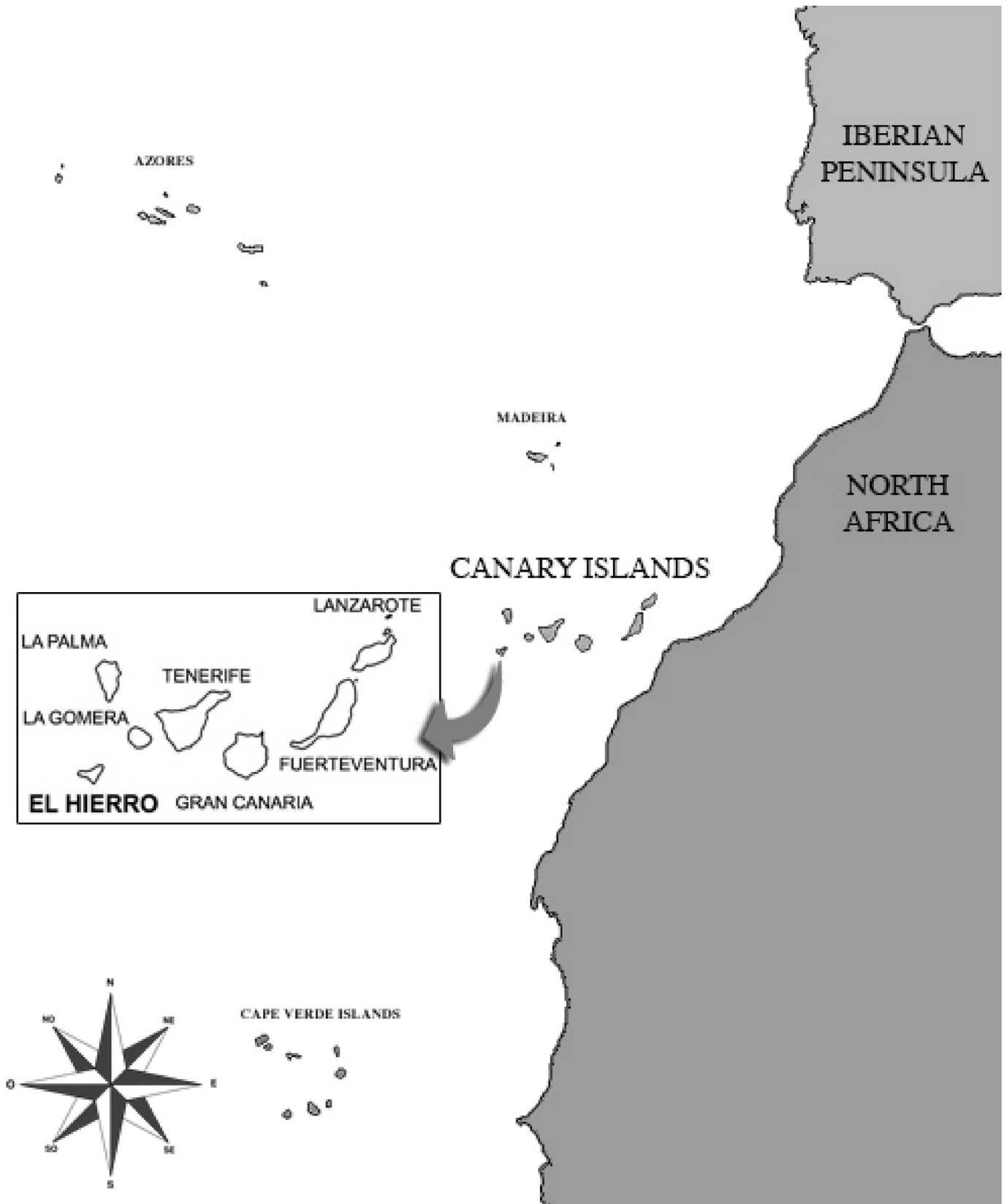


Fig. 1. Location of the Canary Islands in the front of the northwestern African coast.

(Velasco-Vázquez et al., 2005) and the most recent dates for an aboriginal site are from the 1370 ± 100 AD (Jiménez González and Jiménez Gómez, 2007).

Recent genetics studies had shed some light on the aboriginal colonization process, indicating the involvement of at least two migration events. The comparison of the ancient mtDNA

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