



The Gibraltar Out of Africa Exit for Anatomically Modern Humans

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Abstract

Using archaeological, craniometric, anthropological, and samples of ancient mtDNA we examined the possibility that there was a third exit from Africa, of anatomically modern humans (amh) across the Straits of Gibraltar into Iberia and thence throughout Eurasia. The finding of ancient Sub-Saharan mtDNA and related evidences make it clear that the Aurignacian culture was taken into Eurasia from Africa by Cro-Magnon people crossing the Straits of Gibraltar.

Introduction

Between 125,000 and 60,000 years before the present anatomically modern humans (amh) left Africa and settled other parts of the world. Scientist believe there were probably two major migrations out of Africa.

The first migration probably involved amh crossing the Red Sea and moving along the coast into India, and from there entering other parts of Eurasia, on up the coast into East Asia and Southeast Asia on into Australia. This is called the coastal migration event.

The second migration probably involved modern humans entering Eurasia from North Africa and the Levant between 20-10kya. The most recent common ancestor for the populations making these migrations probably belonged to L3 (M,N) lineages.

Most researchers have assumed that haplogroup L3(M,N), was probably carried to western Eurasia via the Levant. But the archaeological and craniometric evidence indicates that the Levant was still occupied by Neanderthal man until 32kya. Clearly, the dates for this lineage in western Eurasian are incongruent to TMRCA of the populations carrying the L3(M,N) lineages into eastern Eurasia which probably date to 60-65kya. This incongruence in relation to the dates for this haplogroup in eastern Eurasia, and its complete absence in much of western Eurasia today suggest that the population carrying this gene into Eurasia may not have entered Eurasian during the two recognized possible Africa exit events.

This suggest that there was probably an alternative origin for amh in western Eurasia instead of the coastal and Levant out of Africa events. In this paper we will review the evidence that there was third

migration out of Africa across the Straits of Gibraltar into Iberia during the Paleolithic. Luis Pericot was sure that the populations associated with the ancient Iberian cultures :Gravettian and Solutrean, were phylogenetically Sub-Saharan African.

Materials and Methods

This research was conducted at the Uthman dan Fodio Institute in Chicago. The samples for this study includes published research literature on population movements from Africa into Eurasia. The craniometric, genomic and archaeological literature relating to African and Eurasian population movements was critically analyzed focusing on haplogroup L3(M,N).

Results

Little is known about the origin and phylogeographic patterning and demography of hg N which share a common root with its L3 counterpart. The TMRCA mtDNA ancestor of hgs L3, M and N lived around 94.3kya. There appears to have been a serial expansion of haplogroup N from the Great Lakes region of Africa to other parts of Africa 93kya. From Tanzania Khoisan speaking people probably spread the haplogroup into Ethiopia by 80kya.

By 70 kya Khoisan people probably spread hg N into West Africa. Sometime before 40kya there was probably a second migration event from Cameroon and possibly the Senegambian region into Northwest Africa on into Iberia.

The mtDNA haplogroup N has the common transitions 73,7028,11719,12705,14766 and 16223. The defining mutations include 8701,9540,10398,10873 and 15301. Haplogroup N is a branch of L3 (M,N).

Macrohaplogroup N is widely distributed in Eastern Europe , the Far East, Oceania , Southeast Asia, India and Africa. The age of hg N is probably 60 kya. Some researchers believe that the split of hg N* and hg 0 was 34.6kya. Many researchers believe that hg N may have appeared in Siberia, Mongolia or China by 20kya. From here it is believed that it was transported to other parts of Eurasia by human migration.

The age calculations for hg N are based on STR variations. The STR variations for the estimated age

of hgs N1-N3 is between 14.2-19.4kya. There are low frequencies for hg N from Fiji, Borneo, Cambodia, Southern China, Japan up into Siberia.

The N lineage is believed to have entered Eurasia via the continental route out of Africa. This hypothesis has been disputed by some researchers because hg N is found in India and Australia. This has led some researchers assuming that there was a single migration of hgs M and N out of Africa.

The haplogroup N is absent among Native Americans. This genetic evidence leads one to assume that hg N may not have been present among the East Asian founder groups of Native Americans who colonized the Americas between 12-17kya.

Researchers disagree on the possible location from which hg N spread across Eurasian. Derenko et al suggest an origin for hg N in Siberia 10kya. They hypothesize that the spread of hg N into eastern Europe occurred around 8kya.

Rootsi et al gives an age of 19.4kya for hgs N1-N3. They date hg N* to 11.9-12.6kya. Haplogroup N1 is distributed in low frequencies among Koreans, North Han, and Manchurians.

Haplogroups N2-A and N2-E are given a Pleistocene-Holocene migratory trajectory from East Asia. Rootsi et al see a recent expansion of hg N from Siberia approximately 12-14 kya.

The most frequent N haplogroup in Eurasia is hg N3. Researchers believe this haplogroup originated in N China around 11.8kya. This corresponds to a probably migration scenario from first East Asia, into North Eastern Europe into the Volga-Ural region.

Haplogroup N is also found in India. The Indian haplogroups include lineages N5-N8. The major transitions in the Indian hg N5 include 8594,10754 and 74544 corresponds to hg R5.

There are also N hgs found in Africa. Haplogroups N,N* and N1 is found in low frequencies within Sub-Saharan groups including Senegambians, Tanzanians and modern Ethiopians. In Egypt 8.8 percent of the Gurma carry hg N1b.

Much of the ancient mtDNA found in Iberia has no relationship to the people presently living in Iberia. Dominguez found that the lineages recovered from ancient skeletons are the African lineages L1b,L2 and L3. Almost 50% of the lineages from the Abautz Chalcolithic deposits and Tres Montes, in Navarre are the Sub-Saharan lineages L1b,L2 and L3.

Discussion

Until recently it was assumed that the earliest dates for hg N were in Eastern Eurasia. This view has changed

recently as a result of the extraction and examination of ancient mtDNA from Cro Magnon skeletons dating to the Aurignacian period.

The archaeological evidence indicates that AMH replaced Neanderthal during the Aurignacian period in Europe between 32-35kya. The Aurignacian civilization appears to have expanded from West to East. The founders of this culture came from Africa. Some researchers have argued that the Aurignacian culture was introduced to Europe from Africa. They based this conclusion on the fact that its tool kit was foreign to the Mousterian type, and the culture appears in a mature form throughout Europe from France to Central Europe.

Around 40,000 BC Europe was occupied mainly by Neanderthals. They begin to be replaced in Europe around 32,000 by the CroMagnon people at Les Eyzies in France. It is also evident that archaic humans were replaced in much of the Levant by the Levantine Aurignacian culture bearers by a local variant of this technology at Ksar Akil XIII-VII 32kya, not 60-50kya.

The Cro Magnon DNA found in the ancient skeletons dates back to the Aurignacian period. The Cro magnon skeletons belong to the N haplogroup.

The Cro Magnon skeletons carried N1a,N1b,N1c and N*. It is characterized by motifs 00073G,10873C, 10238T and A4CC between nucleotide positions 10397 and 10400. Most of the skeletons carried hg N*. It appears that the hg N was the most frequent mtDNA carried by Western European populations for over 20,000 years. This gene as discussed earlier is found primarily today outside Western Europe. The Cro Magnon people were mainly hunter-gathers.

Haak et al. found that the twenty-four samples included haplogroups H or V, T, K, J, N1a and U3. The frequency of N1a among ancient samples ranged from 8% to 42%.

Haak et al found that the first Neolithic farmers did not have a strong genetic influence on modern European female lineages. These researchers found that the farmers were predominately HG N1a. This is interesting because Brace et al found that the craniofacial features of these early European farmers and the Natufians plotted with Sub-Saharan groups, just like the Aurignacians. The existence of the hg N in western Europe from 24,000-7500 kya show continuity between the Pleistocene and Neolithic western Eurasians who carried hg N.

The craniofacial evidence makes it clear that the Levantines and Aurignacian people came from Africa. As a result we find that craniofacial features of the Grimaldi-Cro-Magnon population and especially the Natufian populations when plotted fall within the range

of Sub-Saharan populations like the Niger-Congo speakers.

The CroMagnon people were the first modern humans to settle western Eurasia. The ancient European farmers matched Sub-Saharan African populations. These early European farmers fail to share haplogroups found among contemporary Europeans. Ancient DNA found in the ancient skeletons dating back to this period belong to the N haplogroup.

Researchers have found that the ancient Europeans fail to have a genetic link with contemporary European populations and the Neandertals. An analysis of Cro-Magnon DNA indicates that they belonged to haplogroup N.

The lack of continuity between the contemporary Western Eurasians and ancient Western Eurasian suggest that the Cro Magnon people who originated in Africa probably took this mtDNA with them into western Eurasian when they migrated out of Africa.

The archeological evidence make it clear that at the time modern man was migrating across western Eurasian, the dominant population in Eastern Europe and the Levant was Neanderthal. The concentration of a Neanderthal population in the Levant eliminates the hypothesized overland route into Western Europe by homo sapien sapiens. Moreover, the archaeological evidence makes it clear that the Aurignancian civilization radiated out of Iberia to the rest of Eurasia.

The archaeological evidence make it clear that the Cro Magnon people probably originated in Africa where we find hg N among African populations throughout the continent. The spread of Cro Magnon populations from Iberia eastward into Eastern Europe and the Levant support the view that haplogroup N was carried into Eurasia by Cro Magnon population from Africa across the Straits of Gibraltar into Iberia.

The dates for the hg N in East Asia are far later than the dates for hg N among Cro Magnon populations in western Eurasia. This suggest that the hg N was carried into Iberia by Cro Magnon people.

The Aurignacian culture did not enter Europe from the Levant. The Aurignacian civilization appears to have expanded from West to East. The spread of the Aurignacian culture from Western to Eastern Eurasian suggest that while hg N*,N1 was already present among Western Eurasians, by around 12-14 kya hgs N2- N3 probably originated in Siberia, not East Asia. It would appear that the presence of these haplogroups in Eastern Europe are the result of a back migration from Siberia.

The high frequency of hg N among the ancient Western Eurasians make it clear that eventhough hg M and hg N may have exited Africa along the southern coastal route out of Africa 65kya most carriers of hg N

probably left Africa during the migratory trajectory across the Straits of Gibraltar. Low frequencies of hg N in East Asia and Oceania today, are probably the result of the southern coastal route out of Africa from the Red Sea on into Asia. This view is supported by the ancient M and N lineages found in Asia.

Conclusion

In conclusion, the 'Classic Aurignacian' culture probably began in Africa, crossed the Straits of Gibraltar into Iberia, and expanded eastward across Europe. The archaeological record informs us that CroMagnon people carried hg N and replaced the Neanderthal population of the Levant, at Ksar Akil around 32, 000 years ago, not the Natufians who entered the Levant almost 20,000 years later. Moreover, by 7000 BC the dominant haplogroup of Western Eurasians remained hg N1.

The appearance of phylogenetically related sequences of hg L3 present in many ancient Iberian skeletons suggest that this haplogroup may have a long history in Iberia. The fact that hg N came to Iberia with the Cro-Magnon people in Aurignacian times suggest that carries of L3 may have also been part of this population movement.

The mtDNA, skeletal and archaeological record generally, support a third migration event out of Africa before the expansion of the Natufians into the Levant 10,000-20,000 ybp. This third out of Africa event took place between 40-35kya, when modern man crossed from Africa into Iberia carrying haplogroups N and L3, and began to replace Neanderthal as the dominant population in western Eurasia.

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