



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

It has been assumed that modern humans entered Eurasia either from North Africa and the Levant (the Natufians), or via an eastern route starting from Ethiopia(the Australians) and eventually extending into Eurasia 1. These migration routes suggest an out-of-Africa migration event around 65,000 years ago from Eastern Africa, and a second migration route of modern humans into Eurasia around 10,000-20,000 years ago across the Sinai into the Levant.

These researchers have assumed that haplogroup N was probably carried to Eastern Eurasia by these early migrants since Western Eurasia was still occupied by Neanderthal man. Although this is the traditional view for the origin of the N haplogroup (hg/HG) in Eurasia, the dates for these genes in eastern Eurasian are incongruent to the TMRCA of the populations carrying this haplogroup in eastern and western Eurasia. 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.

There is considerable 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 Gravettian and Solutrean cultures were phylogenetically Sub-Saharan African(1a).

Materials and Methods

We analyzed the craniometric, genomic and archaeological literature relating to African and Eurasian population movements. In this study we critically examined the published literature on ancient mtDNA from Africa and Eurasia focusing on haplogroup 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 2. The TMRCA mtDNA ancestor of hgs L3, M and N lived around 94.3kya³. There appears to have been a serial expansion of haplogroup N from the Great Lakes region of Africa to other parts of Africa 93kya (3a). 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 (3a).

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 4-6, India⁷ and Africa^{3,8-9} . The age of hg N is probably 60 kya. Some researchers believe that the split of hg N* and hg 0 was 34.6kya². 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 variations². The STR variations for the estimated age of hgs N1-N3 is between 14.2-19.4kya². 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 10. This hypothesis has been disputed by some researchers 11 because hg N is found in India 12-12 and Australia 10,14. This has led some researchers assuming that there was a single migration of hgs M and N out of Africa 13,15-17. The haplogroup N is absent among Native Americans 2, 18-22. 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 23.

Researchers disagree on the possible location from which hg N spread across Eurasian 2,24. Derenko et al suggest an origin for hg N in Siberia 10kya 24. They hypothesize that the spread of hg N into eastern Europe occurred around 8kya24 .

Rootsi et al gives an age of 19.4kya for hgs N1-N32 . 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 2. Rootsi et al see a recent expansion of hg N from Siberia approximately 12-14 kya 2.

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 7. 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 9, Tanzanians 3 and modern Ethiopians 1 .In Egypt 8.8 percent of the Gurma carry hg N1b 25.

Much of the ancient mtDNA found in Iberia has no relationship to the people presently living in Iberia (1a). 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.

Conclusion

In conclusion, the 'Classic Aurignacian' culture probably began in Africa, crossed the Straits of Gibraltar into Iberia, and expanded eastward across Europe 3a,40-41,44. 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 42-43, not the Natufians who entered the Levant almost 20,000 years later. Moreover, by 7000 BC the dominant haplogroup of Western Eurasians remained hg N136.

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 35. 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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Reviews

Review 1

Review Title: [The Gibraltar Out of Africa Exit for Anatomically Modern Humans](#)

Posted by Dr. Mahdi Esmailzadeh on 12 Oct 2011 08:38:25 AM GMT

1	Is the subject of the article within the scope of the subject category?	Yes
2	Are the interpretations / conclusions sound and justified by the data?	Yes
3	Is this a new and original contribution?	Yes
4	Does this paper exemplify an awareness of other research on the topic?	Yes
5	Are structure and length satisfactory?	Yes
6	Can you suggest brief additions or amendments or an introductory statement that will increase the value of this paper for an international audience?	No
7	Can you suggest any reductions in the paper, or deletions of parts?	No
8	Is the quality of the diction satisfactory?	Yes
9	Are the illustrations and tables necessary and acceptable?	Yes
10	Are the references adequate and are they all necessary?	Yes
11	Are the keywords and abstract or summary informative?	Yes

Rating: 7

Comment:

Introduction: The introduction lacks clear knowledge about the subject. The importance of the study should be explained. Introduction also lacks the review of literature which is an essential part of this.

Material and methods section: The methodology part is not clear

Discussion: the results should be discussed and compared with studies available.

Competing interests: I declare that I have no competing interests

Invited by the author to make a review on this article? : No

Experience and credentials in the specific area of science:

no

Publications in the same or a related area of science: No

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