

DETERMINING OF THE ORIGIN OF “THE PERUVIAN MINER” MUMMY IN HAVANA, CUBA

Eva Drozdová¹, Kristýna Brzobohatá¹, Anna-Maria Begerock²,
Armando Rangel Rivero³, Mercedes González²,
Dolores Delgado Miranda², and Dana Fialová¹

¹ Laboratory of Molecular and Biological Anthropology
Department of Experimental Biology, Faculty of Science
Masaryk University, Kotlářská 2, 611 37 Brno, Czech Republic
drozdova@sci.muni.cz; brzobohata@sci.muni.cz; dfialova@sci.muni.cz

² Institute for the Scientific Investigation of Mummies
Departamento de Arqueología Andina, Apartado de Correos 15
Las Rozas - 28232 Madrid, Spain

abegerock.iecim@gmail.com; mgonzalez.iecim@gmail.com; ddelgado.iecim@gmail.com

³ Museo Antropológico Edificio Felipe Poey
Colina Universitaria, Plaza de la Revolución, Havana 10400, Cuba
rangel@fbio.uh.cu

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Abstract. The Museo Montané in Havana (Cuba), exhibits a mummy named “the Peruvian Miner”. Originally, during the 1970s, the origin of this mummy was determined as being Peruvian. This was strongly influenced due to the close ties between Cuba and Peru. A recent macroscopic investigation of the mummy, however, put that interpretation in doubt. Additionally, DNA analysis was

started by aDNA purification using MinElute columns according to Yang *et al.* (1998), and followed by amplification and sequencing of hypervariable loop of mtDNA. Analyses of the samples were repeated several times. After considering all results, we hope to contribute to the discussion concerning the geographic and cultural origin of this mummified man.

Keywords. Mummy of Peruvian miner. Museo Montané. Cuba. Ancient DNA. mtDNA.

THE CUBAN MUMMY PROJECT

Since 2015, the Institute for the Scientific Study of Mummies, together with the Cuban National Council of World Heritage, and the University of Havana, have collaborated on "The Cuban Mummy Project". The mandate of this scientific cooperation is to investigate all mummies that are in Cuba, and to conserve them for the future. The research methods are focused on the application of modern practices, such as CT scanning, stable isotopes analysis, and of molecular biological research. One of these subjects, undergoing genetic analysis, is the mummy known as the "Peruvian Miner".

"THE PERUVIAN MINER" MUMMY

"The Peruvian Miner", is a mummy of male sex, owned by the Museum Montané of the University of Havana (Fig. 1). The origin of the body was unknown until 2015, but as most of Cuban mummies came from Peru, he was likewise thought to have been brought from there. Typically, the body position of pre-Columbian Mummies is squatted. However this subject is not, which led the anthropologists and archaeologists in the 1970s, to conclude he had been in a severe accident, which resulted in extreme injury, that effectively precluded a "proper burial". They deduced, therefore, he'd been a miner and suffered a mining accident. In 2015, a macroscopic investigation by the IECIM's team revealed that this mummy, definitely, does not come from Ancient Peru. Our investigation of mtDNA should verify this hypothesis.

METHODS

Three types of samples were taken from the mummy (3rd upper molar, and samples of bone from the humerus and femur).



Fig. 1. The mummy of "Peruvian miner" (Photo: Julio Larramendi).

The aDNA for the mtDNA analysis has been isolated from the 3rd upper molar; the root was broken during collection. The tooth was brushed, cleaned and pulverized. 700 mg of bone powder was lysed in 2 ml of a mixture consisting of 0.5M EDTA, pH 8; 0.5% SDS and 50 µl of proteinase K. Lysis took place for 24 hours. After that, the mixture was centrifuged. DNA was purified using MinElute columns according to Yang et al. (1998). Amplification of the mtDNA hypervariable loop was performed in 50 µl reaction mix consisting of 10 µM dNTPs, 5 µl Restorase buffer, 1 µl Restorase, DDW and 10 µl DNA. Sequences of used primers were published in Lee et al. 2008. The PCR products were visualized on a 3% agar gel and purified by the MinElute PCR Purification kit. The sequencing was performed in commercial laboratories SeqMe (www.seqme.eu).

RESULTS

Sequencing results from the samples were achieved. PCR products were available in 6 cases: PCR of segment 16247 – 1670 failed. The product length was in line with expectations. Overlapping parts of the HVR were aligned and loaded into the MITOMAP database. There is a high rate of post-mortem mutation in the sequences. Meanwhile, the individual was identified as belonging to the haplogroup H. Mutations were detected at position A16077G, A16149G, T16189C. The SNPs A16077G, A16149G are very rare, so we conclude this is due to post mortem damage caused by oxidation.

DISCUSSION

After the bioanthropological examination it is clear that the mummy's origin is not Peru, but rather originated from the Canary Islands (according the historical records, body position etc.). During this time we included the results from the research methods in molecular biology. Analysis of mtDNA showed the haplogroup H. The haplogroups typical for South American populations are A, B, C, D (Rodríguez-Delfin et al. 2001). The mummy known as the "Peruvian Miner" has haplogroup H, which is atypical for South American populations. In regard to the theory of his origin at Canary Islands is the situation more complex. The original mtDNA haplogroup of native Canarian population (Guanches) is U6b and was found in the archaeological material in 8.45%, the haplogroups H/HV/UR(-CRS) was found in 30.98% (Maca-Meyer et al. 2004, Rodríguez-Varela et al. 2017). But the haplogroup H is typical also for Eurasian populations.

CONCLUSION

The results of the mtDNA analysis that we have at present time, show that this man, with high probability, does not originate from South America. This confirms the results of the macroscopic investigations of 2015, that the individual cannot be a "Peruvian Miner". At the stage, the mtDNA results cannot unambiguously confirm his origin as the Canary Islands.

The genetic analyses are still in progress. If, through this and other investigations, we can prove this origin, then this will enable and facilitate further analysis of the mummy.

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