Forensic Identification Based on DNA Typing From Old Bone Samples. Applications to the Identification of Remains From Members of the Ernesto "Che" Guevara´s Guerrilla in Bolivia and Studies of Cuban Pre-Columbian Populations.

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The growing knowledge in the field of molecular biology has boosted the power of the classical human identification techniques. Advances such as the use of the polymerase chain reaction have allowed the forensic investigator to positively identify persons based on the analysis of very small amounts of tissue. Here we report the use of a bone DNA extraction procedure which reproducibly allows the researcher to obtain total nucleic acids suitable for PCR reactions. This procedure permits the positive identification of several members of the guerrilla led by Ernesto "Che" Guevara in the 60´s in Bolivia. Successful DNA typing of both short tandem repeats loci and the hypervariable region of the human mitochondrial DNA was achieved after extracting total DNA from bones obtained from two burial sites. Given the size of the Cuban database for the STR allelic frequencies, a conservative approach was followed to estimate the statistical significance of the genetic evidence. The estimated probabilities of paternity for the two cases in which the paternity logic was applied, were higher than 99%. One case was analyzed using mitochondrial DNA and could not be excluded from the identity proposed by the forensic anthropology team. A fourth case was identified by exclusion, considering the positive identification of the other remains, the historical, and other anthropological evidences.

Much older bone samples (about 2000 years old) have been also successfully typed in our laboratory when samples from skeletal remains belonging to Cuban Ciboney aborigines were examined. The results of both STR and mtDNA typing strongly suggested a mother-child relationship in a particular burial site. The mtDNA control region sequence grouped these remains into the haplogroup A commonly found in Amerindian populations. Based on these results, we speculated on the hypothesis of the South American origin of Antilles pre-Columbian populations and on the possible infanticide practices in these populations. This constitutes the first report on DNA analysis in ancient Cuban pre-Columbian populations.