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Mitochondrial DNA variation and distribution of the Maya pre-Columbian ancient remains found in Puxcatan, Tacotalpa, Tabasco, Mexico and its relationship with native contemporary populations using ancestry network analysis

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Mesoamerica was a region inhabited by multiple cultures that has been divided into three principal periods, the Preclassic, Classic and Postclassic. The ancient Maya were one of the most important pre-Columbian Mesoamerican cultures, this civilization lived in a large region geographically located in the territory of southeastern Mexico, in the states of Campeche, Chiapas, Quintana Roo, Tabasco and Yucatan and the countries of Central America: Belize, Guatemala, Honduras and El Salvador; nevertheless, the knowledge of its origin is very limited. In 2007, several ancient remains were found in the region of Puxcatan-Tacotalpa, Tabasco, Mexico without knowing their temporality, ethnic origin or whether they belong to one or different events across time. To contribute to the knowledge of this population, we decided to focus our study to determine the maternal genetic origin through the analysis of the Hypervariable Region I of Mitochondrial DNA (mtDNA) and its relation with other populations to rebuild genotype characteristics of prehistoric groups and their demography by using molecular biology techniques and the new sequencing technology called Next Generation Sequencing (NGS) to obtain shorter high quality fragments of DNA. In this manner, the study will provide more detailed information about historical, evolutionary and health of the ancient remains from Puxcatan-Tacotalpa. Our findings allowed us to identify the variation and distribution of haplogroup frequency, and to compare ancient and modern population using haplotype ancestry network analysis (Figure 1) to understand their correlation with other native populations. The ancient remains displayed haplogroups A, C and D and showed their demography and ethnic origin.

Biography

María Teresa Navarro-Romero (PhD student) obtained her Master's degree in Biotechnology and Bioengineering department at CINVESTAV-IPN after obtaining her Degree in Biotechnology Engineering at the National Polytechnic Institute in Mexico. She developed new forms to produce DNA vaccines, composed by plasmids. Currently, she is in PhD program in the Department of Genetics and Molecular Biology at CINVESTAV-IPN working with ancient DNA of pre-Columbian Mesoamerican cultures. She did one year of research stay for her Doctoral thesis in the Institute of Clinical Molecular Biology at Christian-Albrechts-University from Kiel, Germany using bioinformatics tools applied to next generation sequencing of aDNA. She is interested in Molecular Biology, Genetics, Population Genetics, Network Analysis, Ancient DNA, Mitochondrial DNA Analysis, NGS, Bioinformatics, Ancient Diseases, Historical Demography, Molecular Anthropology, Biotechnology, Plasmid Construction, DNA Extraction, Gene Regulation, Molecular Cloning and Gene Regulation Expression.

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