

Title : The Northern Thai Population's Mitochondrial DNA Haplogroup Database System

Author(s) : 1. Athicha Chumphukhiao

Student ID : 650510197

Major : Biochemistry and Biochemical Innovation

Advisor(s) : 1. Associate Professor Dr. Hataichanoke Niamsup

Type of presentation* (choose 1) : Oral Presentation (เฉพาะ ตัวแทนศ.ที่สาขาเลือกให้นำเสนอแบบบรรยาย)
 Poster (กรณี นำเสนอผลงานปัญหาพิเศษ/การค้นคว้าอิสระ)
 Cooperative Education (กรณี นำเสนอผลงานสหกิจศึกษา)

ABSTRACT

Haplogroups of mitochondrial DNA (mtDNA) in the Northern Thai population. Laboratory data from 200 patients who received testing at the Forensic Genetics and Trace Evidence Laboratory, Department of Forensic Medicine, Faculty of Medicine, Chiang Mai University, between 2018 and 2025, were used in a retrospective analysis. Based on available mtDNA profiles and proof of domicile in Northern Thailand, subjects were chosen. Using the EMPOP database, polymorphisms found in the mtDNA sequences were categorized into haplogroups. Microsoft Excel was then used to create a retrieval platform for finding and examining these polymorphisms. The population was successfully divided into 11 different haplogroups, indicating a high haplotype diversity of 0.99206. Haplogroup F (28.5%), Haplogroup M (27.0%), and Haplogroup C (12.0%) were the three most common lineages. Together, the remaining haplogroups (D, A, R, N, B, L, G, and U) made approximately 32.5% of the research population. In order to conduct a comparison study against the 200-individual reference set, users can enter polymorphism sites from the Hypervariable Regions 1 and 2 (HVR1 and HVR2) of a query sample using the comparative search engine integrated into the created Microsoft Excel platform. The technology automatically reports the frequency of that profile in the database when it finds a matching haplotype. Moreover, among the 200 individuals, internal duplication analysis identified 143 distinct haplotypes. The significant genetic variety of the dataset is reflected in this low redundancy, which suggests good individual discrimination power. To sum up, this platform acts as the laboratory's primary internal mtDNA database. These results improve the dependability and evidential value of forensic genetic tests in Northern Thailand and make a substantial contribution to maternal lineage research.

*Type of presentation must be matched with an option you choosing on student upload system.

**The abstract can be more than one page and must be approved by project advisor before upload.