

National Institute of Justice

Award Title: Maximizing DNA Testing Potential with the Generation of High-Quality Genome Reference Data

Award Description:

Mitochondrial DNA (mtDNA) testing in the forensic context requires appropriate, high quality population databases for estimating the rarity of questioned haplotypes. If the mtDNA haplotypes of the evidence and the reference are consistent, the frequency of the haplotype, as determined from an appropriate reference population database, provides an estimate of the likelihood that the evidence profile is maternally related to the reference rather than a random individual in the population. Since 2003, and primarily with funding provided by the National Institute of Justice, the Armed Forces DNA Identification Laboratory has been systematically generating mtDNA control region data to augment available reference population data and ultimately to improve the framework upon which forensic mtDNA typing is based. Over 20,000 haplotypes have been generated since 2003, and nearly one-fourth of those sequences are now publicly available for use in statistical interpretation of mtDNA control region evidence. This project will expand the control region mtDNA databasing efforts to 1) increase the large-scale availability of entire mtDNA genome reference population data and 2) improve the information technology infrastructure required to access mtGenome data and employ them in forensic applications. With the large-scale availability of high quality entire mtGenome data, forensic mtDNA interpretation guidelines can be greatly improved and the full potential of mtDNA testing in forensic casework can be realized.

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