H51 Reuniting Families: Using Phenotypic and Genotypic Forensic Evidence to Identify Unknown Immigrant Remains

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The authors will explain the formation of a new database and DNA effort to help identify immigrants that perish crossing the US/Mexico border.

As the database grows, additional state offices participate and families become aware of the project, it is anticipated and hoped that the project can assist in significantly lowering the number of unidentified immigrants from the current 44%.

Every year more than a million individuals pass illegally between the United States and Mexico. Along this line of passage spanning roughly 2,000 miles between Texas, Arizona, New Mexico, and California, there remain few migratory routes not well patrolled by the Department of Immigration and Naturalization, and these are confined to areas of extremely inhospitable terrain. As a result, individuals perish at an alarming rate, more than 500 people in 2001 alone, in their attempt at illegal immigration. Unfortunately, 167 of the 503 *known* deaths remain unidentified. To date there is no centralized, private, federal or statemandated mechanism that attempts the collection, curation or repatriation of the unidentified recovered remains. Municipal law enforcement agencies are further hampered in their efforts at identification because of the traditional lack of proper data sets necessary to make reasonable assumptions about the genetic heritage of discovered remains. The purpose of this project is to provide a database to aid in the identification process, helping to take some of the burden from the overloaded agencies that currently handle this work. In addition, the database will provide a link for families to a system that can help provide answers.

This initiative has created a distributed on-line database, accessible by public officials and private citizens interested in searching for missing individuals based on both phenotypic and genotypic characteristics. This broad effort includes the exhumation of individuals from geographically disparate pauper graves, the classification of their physical characteristics, and the cataloging of observed metric traits, to include associated articles of possession, in a local relational database. The physical data alone represents a significant increase in our experimental data set, and therefore our knowledge, about the quantitative characteristics of individuals of both North and Central American heritage.

Concurrent with the documentation of physical forensic evidence is the examination of individual DNA signatures. This project will attempt to perform genetic analysis of all unidentified immigrant remains and store the results for later comparison with candidate family members. The molecular analysis includes the sequence examination of the mitochondrial DNA (mtDNA) D-Loop region and, as funding permits, Short Tandem Repeat (STR) analysis.

Because the Reuniting Families initiative is created around the paradigm of a password-controlled on-line relational data interface, it simultaneously achieves two objectives. First, as the curated repository grows, it will provide a much-needed set of genetic data that will aid in identifications, both in known immigrant cases and in other forensic situations. Secondly, relatives or friends of missing immigrants will be able to participate in an on-line search of the database using unique physical characteristics (height, age, sex, skeletal trauma) and descriptions of articles of clothing to help identify missing individuals. If this provides a possible match, DNA testing of a maternal relative will be done to confirm identification, and steps toward the repatriation of the remains will be taken.

In July 2003, the first DNA identification of the project was performed thanks to the individuals at the Pima County Medical Examiners office and their extraordinary efforts. As the database grows, additional state offices participate and families become aware of the project, it is anticipated and hoped that the project can assist in significantly lowering the number of unidentified immigrants from the current 44%.

mtDNA, Immigrant Deaths, Database

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