



### **A165 Genetic Approach to the Identification of Enforced Disappearance Victims in Colombia**

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This goal of this presentation is to describe the problems posed by the internal armed conflict and enforced disappearance of over 15,000 victims in the last four decades in Colombia. The results obtained by the Forensic Genetics Lab of the National Institute of Legal Medicine, in the area, of DNA identification will be shown. This effort was undertaken to

support the Colombian legal system, particularly the Justice and Peace project implemented in 2005. The audience will also understand the resulting technical obstacles, challenges, constraints, and recommendations of the genetics lab. Some examples of the cases analyzed will be presented.

This presentation will impact the forensic science community by providing the key aspects of this approach to the identification of victims of enforced disappearances, such as the evaluation of the genetic information provided by living family members. Some technical problems include a complete kinship relationship (e.g., siblings who share father and mother), paternity certainty (e.g., presumptive father), and number of informative family members.

The protocols for DNA extraction from skeletal remains, amplification via autonomic PCR STRs and Y Chromosome, as well as mtDNA sequencing used by the Genetics Lab of the Institute will be presented. The genetic approach to the analysis of maternal (mtDNA) and paternal (Y Chromosome) lineage will be highlighted, together with the construction and implementation of genetic profile databases obtained both from missing persons (unidentified bodies) and presumptive family members. The purpose of the above is to determine positive identity and return the remains to family members in order for them to grieve for their loved ones.

In some identification cases, the only information available to conduct a genetic analysis is the victim's presumptive living sibling. This poses a technical challenge to the genetics lab, primarily because of the probabilistic kinship assessment. Therefore, it is necessary to conduct an orientation study on the maternal and/or paternal lineage through sequencing of HVI and HVII regions of mtDNA and Short Tandem Repeats (STRs) of Y chromosome. The lab must have information concerning the circumstances in which the body was buried and/or exhumed, potential kinship among victims, body mutilation, etc.

A molecular approach protocol is proposed, depending on the living family members that may provide genetic information. The requirements of the lab to effectively support the Colombian legal system in the field of identification of missing individuals within the framework of the Justice and Peace Project will be presented.

Two cases that show technical constraints from the genetic standpoint will be presented as an example of the current problems. Recommendations will also be made.

#### **Enforced Disappearance, mtDNA, Y Chromosome**