

## **The Identification of the Victims Tortured and Murdered during General Pinochet's Dictatorship in Chile**

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September 11, 1973, the date of the Chilean coup d'état, was the beginning of a nightmare for socialist President Salvador Allende, thousands of followers of President Allende and their families, and a country that has been filled with turmoil for over three decades. Immediately after the coup d'état, the country was led by a military dictatorship until 1990; this militant government has been found guilty of numerous human rights violations. Foot soldiers and air raid forces imprisoned, tortured, and killed thousands. In March 2006, President Michelle Bachelet, a victim of torture by the military dictatorship, was elected president and that same year formed an international commission to identify the '*desaparecidos*' of Chile. The international commission consisted of experts from around the world.

In order to tackle the challenge of identifying the victims of General Pinochet's rule, a concerted effort of the international commission and the Government of Chile was necessary. Staff and scientists from the University of North Texas Health Science Center played a small but pivotal role in the associations and the identifications of many of these victims.

This presentation will include a discussion of the teams assembled for this onerous case, the challenges presented for the DNA human identification efforts, the development of a national DNA database, the arduous undertaking of defining reference specimens to compare to the unidentified remains, the processing of remains exposed to different elements and environments, and the eventual associations made.

The teams assembled at the Center for Human Identification at the University of North Texas Health Science Center include DNA analysts for human remains and family reference sample processing, high throughput databasing analysts, programmers, and statisticians. In addition, the larger project included international contributors from South America, European countries, and North America. These contributors consisted of attorneys, human rights activists, scientific directors from missing persons programs, and forensic scientists from many different disciplines.

Challenges for the DNA human identification efforts included previous erroneous scientific reports on the same sets of remains, the recovery of DNA for nuclear and mitochondrial DNA testing was often highly degraded and/or inhibited, identifying appropriate reference samples for each victim, and the construction of the databases for the victim profiles and the reference profiles and sophisticated algorithms for matching purposes.

A population database for the country of Chile was developed using autosomal STRs, Y-STRs, and mtDNA sequence data. A total of 1,020 men from five locations (approximately 200 men per location/region) in Chile donated buccal specimens. These five locations were: Iquique, Santiago, Concepción, Temuco, and Punta Arenas. These three systems were tested and demonstrated that they are mutually independent; therefore, statistics with autosomal STRs, Y-STRs, and mtDNA data were combined using the product rule for associations reported to the Government of Chile. Furthermore, these data were independently evaluated and uploaded into EMPOP. The results of this evaluation will be discussed.

In order to determine the appropriate reference samples for autosomal STRs, Y-STRs, and mitochondrial DNA, each case file was reviewed with meticulous detail to determine which living

relatives should/could be collected and placed into the family reference database. The pedigree of each victim was drawn; each relative contributing to the autosomal STR information was marked for inclusion, one paternal line relative was identified for Y-STR testing, and one maternal line relative was identified for mitochondrial DNA testing. For example, the DNA information placed into the reference database of a male victim with two full biological brothers would include: 1) autosomal STRs for both brothers; 2) Y-STRs for one of the two brothers; and 3) mitochondrial DNA for one of the two brothers.

Lastly, we will discuss the sampling of the skeletal remains, the submission of the samples to the Center for Human Identification, the challenges for processing these remains, and the number of samples with full and partial profiles. Several examples of associations and eventual identifications will be presented.