B65 Mutations in the DNA Matching Reports of Persons Identified Throughout the Former Yugoslavia

Ana Milos, BS, Arijana Pozder, BS, Dijana Kadric, BS, Jon M. Davoren, MS, Rijad Konjhodzic, BS, and Edwin F. Huffine, MS, International Commission on Missing Persons, Alipasina 45a, Sarajevo, 71000, Bosnia and Herzegovina*

This presentation will discuss the apparent mutations that have been observed during the course of matching the STR profiles of blood reference samples to that of bone samples.

This presentation will impact the forensic community and/or humanity by presenting data to describe the mutations that have been observed during the process of identification of missing persons from throughout the former Yugoslavia.

This presentation will discuss the apparent mutations that have been observed during the course of matching the STR profiles of blood reference samples to that of bone samples.

The International Commission on Missing Persons has developed a DNA led system for the identification of the estimated 30,000 – 40,000 missing persons from throughout the former Yugoslavia. This DNA led system involves typing of both family reference and bone samples as one of the first steps in the identification process. Following DNA testing, results are stored in databases and software looks for matches between bone and family reference samples. This approach accelerates that identification process for samples as it uses the DNA matches as the first piece of evidence in the process. Traditionally DNA testing has been used to confirm identifications performed by a pathologist.

Although the identification process is accelerated by using DNA matches as the initial lead in the identification process there are some limitations of such a system. One limitation is the requirement to produce reliable STR profiles from bone samples. A second limitation is that there is a need for at least 15 STR loci in order to provide strong statistical significance to the DNA match. A third limitation is that STR loci can mutate and thereby reduce the statistical significance of the match. The ICMP has been able to overcome the first limitations through the development of extraction technique. The second limitation has been overcome by the amplification of up to 19 different STR loci from the Promega PowerPlex® 16 kit and the ABI SeFiler® kit. The third limitation is much more difficult to overcome however if enough loci are amplified they will eventually show that the suspected match is real or just a random chance occurrence.

The ICMP has generated over 4000 DNA matching reports related to missing persons from throughout the former Yugoslavia and is currently matching samples at a rate of 300 – 400 per month. In these reports there have been a number for which it has been observed that the STR profile in a parent is different from that of a child. The presence of a single difference between related people has been observed to occur between reference samples as well as between bone samples and the family relatives.

STR, Mutations, PowerPlex16

 ** Presenting Author*