



Physical Anthropology Section – 2010

H125 The ICMP Identification Coordination Center: A Sample Accessioning and Blind DNA Matching System for Missing Persons Identification on a Regional Scale

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After attending this presentation, attendees will have learned how a centralized DNA matching, sample, and information coordination facility can assist in making missing persons identifications on a large scale.

This presentation will impact the forensic community by increasing the knowledge base of how large scale missing persons identification programs may be structured efficiently.

The International Commission on Missing Persons (ICMP) conducts large scale missing persons identification using an integrated, multidisciplinary approach that is anchored by a "DNA-led" blind DNA matching system that compares DNA profiles from victims (usually skeletal remains from mass graves) to a database of DNA profiles from family members of the missing. At the heart of this system is the ICMP Identification Coordination Center (ICC), where victim and reference samples are received and accessioned, distributed to the DNA laboratory system, DNA profiles are received back from the laboratory, and DNA matching and reporting are performed. In the former Yugoslavia, as of August 2009, the ICC has collected over 87,000 family reference blood samples representing 28,783 missing persons, and maintains a database of 29,748 DNA profiles obtained from victim bone or tooth samples. DNA database comparisons have resulted in issuing 24,741 DNA match reports representing 14,741 different individuals. Many match reports involve reassociation of dissociated body parts which are common among remains recovered from the secondary mass graves associated with the 1995 Srebrenica mass killing event.

The ICC is responsible for the collection of blood samples from family members of the missing, and recording relevant information on both the missing person and the family members to permit establishing a DNA match. Antemortem information on the missing person is recorded, and informed consent is established to assure participants of genetic data protection and the use to which their sample will be made. Participants may indicate their willingness to have their sample used for the purposes of war crimes trials or other such criminalistic proceedings. Large scale family reference collection efforts by the ICC involve public information campaigns, and have been conducted throughout the former Yugoslavia and globally.

Victim samples, usually bone or teeth, are obtained by the ICC either from ICMP field or mortuary teams, or by other contributors. Both victim and reference samples are accessioned at the ICC in strict accordance with chain of custody, and are immediately assigned bar codes which remain their sole identifier throughout the DNA testing procedure. A complete lack of information regarding sample origin or presumption of identity during DNA testing contributes to the objectivity of the process.

Once DNA profiles are obtained from the DNA laboratory, they are entered into a central database and candidate matches to any existing profiles are determined using internally developed DNA Matching software. The DNA Matching module conducts pairwise comparisons, outputting results based on direct match, half allele share (maternity or paternity indices), or sibling indices. Once candidate matches are discovered, final kinship statistics involving all family reference samples are generated using the commercial software DNAView. DNA match reports are issued by ICC when the final surety of identification exceeds 99.95%, with prior probabilities ascribed based on the number of individuals missing in a particular region or event. Statistical comparison reports are also generated to report possible DNA associations of lower surety, which can be used in combination with other evidence under well defined policy.

All data storage and analysis functions of the ICC are managed by an internally developed forensic data management system (fDMS). In this system, missing persons information, family reference information, the DNA Matching Module, and DNA report generation and tracking functions are efficiently integrated to result in a fast, flexible, and user-friendly system.

ICMP, Missing Persons Identification, DNA Matching