



FORENSIC SERVICES UNIT @ UNT Center for Human Identification



Bulletin: June 2010
Topic: DNA Database Searches
Missing Persons

Learning Objective:

Collect and submit samples from all available family members, even if you don't think they are very relevant to the missing person, and send to a lab that does all three types of DNA analysis - STRs, mtDNA, and Y-STRs – with access to CODIS 6.1.

Terms:

DNA: The material that transfers genetic information in all life forms

STR: DNA contributed by both mother and father to their children

mtDNA: DNA contributed only by the mother to her male and female children

Y-STR: DNA contributed only by the father to his male children

NDIS: National DNA Index System (national level)

Profile: A numerical representation of the DNA code that describes a particular individual

MP: Missing Person

UID: Unidentified Deceased

Remains: Biological material from the unidentified deceased

CODIS: Combined DNA Index System

CODIS 6.1: A version of CODIS that accepts and searches mtDNA

Pedigree: Family tree of biologically related family members

Specimen: Sample or evidence

Narrative:

In national searches, cases in which a “single” family member reference sample has been submitted are only searched against the unidentified deceased if two conditions are met:

1. the sample must be from a mother, father, or child of a missing person, and
2. the specimen profile must be comprised of 2 DNA technologies (STRs, & either mtDNA or Y-STRs).

This means that cases in which DNA samples from only a single brother or sister were submitted, the cases are not searched automatically each month at the national level (NDIS).

Single family member reference samples that have both mtDNA and STRs are searched once per quarter against the UID using only the mtDNA profiles. This means that the UID who have mtDNA profiles are compared to brothers, sisters, aunts, uncles, etc. that also have a mtDNA profile. Thus, we stress the importance of sending UID samples and family member reference samples to laboratories that do mtDNA analysis and have access to CODIS version 6.1 (the only version of CODIS that is capable of uploading mtDNA profiles).

Family member reference cases with more than one family member submitted are entered into CODIS in pedigree trees (at least from labs that have CODIS version 6.1), and they are searched each month at the national level even if they only have STR data. **HOWEVER, this search is not all inclusive** in that some remains (UID) only have mtDNA profiles, which are not comparable to STR profiles. The limited data obtained from some UID remains means that family member reference cases should always have both mtDNA and STR testing to ensure the best national searches against the largest number of UID candidates possible. Therefore, the collecting of at least one maternally (mother's) related relative for each MP case is critical to the identification process.

In short, **collect and submit all available family members**, even if you don't think they are very relevant to the MP, and we will choose the best ones to process. **All samples should be submitted to a lab that does all three types of DNA analysis - STRs, mtDNA, and Y-STRs - and to a lab that has access to CODIS 6.1.** This will ensure that the best profiles and the most available data are used to search at all levels of CODIS.

Note: Family member reference samples may only be searched against the unidentified deceased samples at the national level.

Acknowledgments:

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Public Sector Review: Todd Matthews, Chair National Volunteer Advisory Group

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