STRATEGIES FOR RECONCILIATION OF DNA PROFILE DATA AND BIOGRAPHICAL DATA AT AN SDIS DATABASING LABORATORY

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The Texas DPS CODIS Offender DNA Databasing Laboratory (Texas SDIS Lab) encounters challenges that differ from traditional forensic DNA casework laboratories. Because the main role of CODIS is to provide law enforcement with investigative leads, emphasis must be placed on providing accurate identifying information. Offender biographical data and fingerprints provided with each sample is compared with crime record data to verify the identification of the offender prior to processing their DNA sample. In some cases, the information obtained from the DNA profile leads to questions about the offender's reported biographical data. The following discrepancies are rare but important to investigate for internal laboratory quality assurance, familial searching, and providing accurate identifying information associated with a CODIS hit.

Sex/gender discrepancies are queried in the internal Laboratory Information Management System (LIMS) to yield inconsistencies between DNA analysis of Amelogenin and sex data entered at data entry. Of the 1035 samples investigated, 73% were resolved as data entry errors, of which 68% occurred at internal database entry and 5% at crime records entry. The remaining 27% are sex-typing issues as a result of genetic insertions, deletions, primer site polymorphisms at Amelogenin, or other genetic anomalies. Results suggest that reported biological sex may contradict with DNA sex based on an individual's self-identification.

Possible sets of twins are identified through DNA matches produced by searching the database against itself. A check for duplicate samples is completed with crime records, supervising agencies and analyzing requested vital records. To date, over 800 sets of identical twins exist in Texas SDIS. Currently, there is no method within CODIS to differentiate individuals from a set of identical twins. When a match occurs with identical twins, both siblings are reported.

Twenty-four chimeric or mixed profile CODIS offender samples have been identified as of 2019 in Texas SDIS. The explanations for such instances vary from embryonic development to bone marrow transplants. If a source of contamination cannot be found for a mixed profile, an additional DNA sample, preferably from different biological material, is requested. Once confirmation testing of the mixed profile is performed with a second collection, the sample is uploaded and searched in the Multi-Allelic Offender (MAO) specimen category.