



Criminalistics Section – 2004

B55 Illinois State Police DNA Outsourcing Project: On the Hit Parade!

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Participants will learn about the successes and lessons learned from a DNA outsourcing contract between a state forensic laboratory system and a private DNA testing laboratory that began in November of 2000. Discussion of the nature of cases sent, types of samples sent, management and organization of the contract, interpretation methodology, and hit rates will be presented. The implications of batched contract work on court and discovery requests will also be presented. Both authors will jointly make this presentation.

This presentation will review some of the experiences and data arising from a DNA outsourcing project undertaken by the Illinois State Police (ISP), under contract with Orchid Cellmark Germantown, formerly Cellmark Diagnostics, to perform DNA testing on forensic casework. The ultimate goal of this ongoing outsourcing project is to reduce the backlog of cases at ISP while enabling the rapid upload of high-quality profiles into the national, state and local CODIS^{mt} databases. This project is currently entering its third year of operation and to date has yielded over 180 CODIS hits.

In its first year alone, this outsourcing project involved the testing of approximately 2,000 pieces of evidence and corresponding victim standards from forensic no-suspect cases. One third of the samples came to Cellmark as previously extracted DNA samples. An additional ~700 suspect standards (unrelated to the above cases) were also tested in the course of this first year. The second year involved the testing of approximately 1,700 forensic cases, including over 1,570 semen and 570 nonsemen stains. Over 150 of these cases had suspects and, if a match were observed, required the inclusion of a statistical analysis in the written report. It is anticipated that similar numbers and distributions of cases will be tested in the next two years of this outsourcing contract.

Many different kinds of samples have been tested including semen stains, vaginal and rectal swabs, items of clothing, swabs taken from burglaries, and hair samples. The decision-making process, management, organization, and prioritization of how to outsource these various types of samples and cases will be discussed. Information on the amount of work needed to prepare the samples for outsourcing (i.e., presumptive screening requirements, packaging and shipping), as well as complications of evidence-return will be presented. From the contract laboratory perspective, details on processing modes for larger-scale forensic work will be described including a discussion on some methods of batching, use of a laboratory tracking system (LIMS), and interpretation and reporting methodologies.

Both suspect and no-suspect cases have been tested in the course of this contract. Appropriate profiles are marked for possible CODIS^{mt} upload by the contract laboratory and sent via diskette to ISP. As a measure of the success of this program, the percentage of samples marked for CODIS^{mt} upload out of the total of those sent will be presented. For no-suspect cases involving a sexual assault sample, a "deduced" profile must often be determined from a mixture of sperm donor and victim. Two types of deduced profiles are possible: 1) those that correspond to a clean single-source male profile, and 2) those in which the victim alleles cannot be entirely removed from the profile, thus yielding a degenerate profile. Data will be provided on the percentage of samples yielding each of these two types of deduced profiles. Likewise, information will be provided on the number of hits obtained for the contract in total, per each type of deduced profile and per category of case-to-case hits vs. case-to-offender hits. Where possible, interand intra-state hits will be distinguished, as well as multiple vs. single case hits. The process used by ISP to review and upload the CODIS^{mt} ready data from this outsourcing project will also be outlined.

As this and other outsourcing projects grow over time, requests for discovery and court testimony will become increasingly more common. In fact, this trend has already been noted at Cellmark for discovery requests. Although there have been few court requests to date, these are anticipated to increase within the next year or so. As larger-scale processing procedures typically involve sample batching and a team approach to testing, the implications of court and discovery on both the state and contract laboratory will be briefly discussed in this presentation.

Undoubtedly, the value of producing high-quality casework CODIS data in a rapid and efficient manner is enormous. Diligent teamwork and open communication between administrators, contract managers, analysts, and technicians from all relevant parties are required to ensure the successful execution of a forensic DNA outsourcing project. It is hoped that the lessons learned by the parties involved in this particular project and described in this presentation may be a useful source of information for other such joint endeavors.

DNA Outsourcing, No-Suspect and Suspect Casework, CODIS^{mt}