

B103 An Efficient Approach to Validation of New Technologies in a Forensic DNA Laboratory

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After attending this presentation, attendees will learn how the Tennessee Bureau of Investigation (TBI) efficiently validated new technologies while maintaining the productivity of its crime laboratory scientists through partnership with qualified external personnel.

This presentation will impact the forensic community and/or humanity by demonstrating an effective internal validation process which: 1) significantly shortens the time to implementation of new technology, 2) allows crime laboratory scientists to remain focused on casework analysis, thereby preventing unnecessary delays or backlogs, 3) meets all SWGDAM/DAB guidelines and accreditation standards, and 4) provides accurate data enabling the technical manager to confirm robust, reliable and reproducible performance and evaluate performance characteristics and limitations within their laboratory.

The implementation of new technologies is often required in order to improve efficiency and effectiveness in a forensic DNA laboratory. In the case of the Tennessee Bureau of Investigation, it was necessary to bring multiple instrument platforms on-line (Applied Biosystems 3130 Genetic Analyzer and ABI PRISM® 7000 Sequence Detection System) and chemistries (AmpF/STR® Identifiler PCR Amplification Kit, AmpF/STR® ProFiler Plus® PCR Amplification Kit, COfiler® PCR Amplification Kit, Quantifiler® Human and Quantifiler Y Human Male DNA Quantification Kits) at multiple TBI locations (Nashville, Knoxville and Memphis). It was apparent that performing the required validation studies in the traditional manner would have been an extremely time-consuming project involving many forensic scientists at each laboratory site. This would take the scientists away from their primary objective of performing casework analysis thereby increasing turnaround of DNA casework.

Utilizing grant funding from the National Institute of Justice, TBI opted to participate in the Validation Support Services program created by Applied Biosystems. This program, which was shaped with input from numerous entities within the forensic community including NFSTC and NIST, employs several highly qualified independent consultants with in-depth forensic DNA experience. These consultants partnered with crime laboratory management to map out a comprehensive validation plan including experimental design, timelines and reporting deliverables. Once the plan was agreed upon, the validation studies were conducted on-site by AB Field Application Scientists, who, as experienced forensic DNA analysts, possess a strong understanding of validation requirements and objectives. The studies and data analysis were completed with ongoing feedback from crime laboratory management, and the consultant/project manager reported the results back to the crime laboratory technical manager for review and standard operating procedure development. Lab personnel from each site were encouraged to remain informed and engaged in the validation process as much as possible without interfering with their primary casework responsibilities. This experience, coupled with the extensive training that occurred at each site after validation was completed, further streamlined the entire validation, training and implementation experience.

At the Tennessee Bureau of Investigation, the result was a reduced number of forensic scientists involved with the internal validation at each site. Ultimately, the major support provided by this program allowed more time to be spent by crime laboratory scientists processing casework samples while validation studies and statistical analyses were being conducted by qualified external personnel. The final result was the rapid implementation and use of new DNA equipment and typing kits without sacrificing valuable time in the crime laboratory.

An evaluation of this validation project will be presented including lessons learned, critical success factors, and recommendations for future projects.

Validation, Support, New Technologies