B62 Internal Validation of the AmpF/STR® Identifiler PCR Amplification Kit for Casework Use With the ABI Prism 310 Genetic Analyzer

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After attending this presentation, attendees will be presented with a summary of the appropriate measures taken to implement the use of a new capillary electrophoresis platform, the ABI Prism 310 Genetic Analyzer, in combination with validating a new single amplification kit, AmpF/STR® Identifiler, for the development of the 13 core CODIS STR loci for use in forensic casework.

This presentation will demonstrate a complete and thorough internal validation study according to the quality assurance standards set forth by the Forensic DNA community for the adoption of both a new instrument platform and multiplex kit to increase forensic DNA casework productivity.

The ABI Prism 310 Genetic Analyzer is a single capillary automated electrophoresis platform capable of processing approximately 48 DNA samples per 24 hour period depending on the run parameters (i.e., sample run time, sample injection time, etc…). The AmpF/STR® Identifiler™ PCR Amplification kit is a 5 dye short tandem repeat (STR) multiplex assay that amplifies 15 tetranucleotide repeat loci and the Amelogenin gender determining marker in a single PCR amplification. Prior to casework implementation of the AmpF/STR® PCR amplification kit on the ABI Prism 310 Genetic Analyzer, internal validation studies must be conducted. In accordance with section 8.1.2.2 (developmental validation), and sections 8.1.3.1 (a) and (b) (internal validation) of the FBI's Quality Assurance Standards for Forensic DNA Testing Laboratories, the Alabama Department of Forensic Sciences completed the forensic validation of a capillary electrophoresis system in conjunction with the AmpF/STR® Identifiler™ single amplification kit. Results of validation studies conducted at the Alabama Department of Forensic Sciences Birmingham DNA Laboratory showed: sensitivity down to 100 picograms when analyzed with a 75 RFU threshold; mixture studies exhibiting a full minor component profile at a 1:4 ratio and a partial minor component profile at a 1:19 ratio; reproducible allele results over 20 separate amplifications and injections conducted over a 3 day period with the 9947A positive control; and a precision of <0.13 base for all alleles. These results support the adoption of the ABI Prism 310 Genetic Analyzer for use in forensic casework with the AmpF/STR® Identifiler™ PCR Amplification Kit at the Alabama Department of Forensic Sciences Birmingham DNA Laboratory.

Forensic Science, Identifiler™, Internal Validation

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