G90 Conversion of the Wyoming State Crime Laboratory From FM-BIO Slab Gel Technology to the AB 3130 Genetic Analyzer for CODIS and Casework Sample Analysis

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After attending this presentation, attendees will have gained an understanding of the work involving validation of the forensic methodology used with an Applied Biosystems 3130 Genetic Analyzer for genotyping CODIS. This validation includes the study of precision, reproducibility, concordance, sensitivity and the ability to resolved mixtures of biological samples.

This presentation will impact the forensic community due to its validation of methodology for use on an instrument and associated kit technologies is vital to obtaining precise and accurate profiles of genetic samples for case work or the CODIS database.

For a method to be validated for forensic analysis it must meet several guidelines put in place by the Scientific Working Group on DNA Analysis Methods. The data must show a degree of precision and reproducibility based on known laboratory controls. To validate such a system it must be shown that there is no contamination between samples run on the instrument. A series of non-probative samples must be run to verify that the protocols are suitable for samples that could be encountered during forensic casework.

The validation was performed with the Profiler Plus™ and the COfiler™ allelic kits and all the samples were analyzed using the Genemapper ID™ software. To ensure the reproducibility and precision of the instrument a series of allelic ladders were injected. The allele calls and the peak heights were analyzed and confirmed that the protocols performed by the Wyoming State Crime Laboratory (WSCL) were conservative enough to meet the stringent standards necessary for forensic investigation. A series of fifteen samples were amplified, run and analyzed with the standard WSCL protocols. These samples had been analyzed before on the WSCL's AB 310 genetic analyzer and had known profiles. The experimentation with the 3130 concluded that the instrument was capable of producing profiles that matched the known profile. These studies demonsrtated that no contamination between samples injected on the instrument occurred. With each study, negative controls were performed across the board with each sample showing no contamination.

The data obtained from the validation of the Applied Biosystems 3130 at the WSCL. It is important for those using the AB 3130 genetic analyzer to be familiar with how the instrument and associated kit technologies were validated and the experimentation that was performed.

3130, Validation, CODIS

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