



A127 Validation and Comparison of Four Commercially Available STR Kits

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After attending this presentation, attendees will gain insight into the benefits and limitations of four STR amplification kits based on our comparative analysis for application to forensic casework.

This presentation will impact the forensic science community by showing a direct comparative analysis of four commercially available kits, including two of the newest kits available in the forensic community.

The study includes the validation and comparative analysis of four STR amplification kits used in forensic casework: AmpF!STR® Identifiler®, Identifiler® Plus, and MiniFiler™ (Applied Biosystems) and PowerPlex® 16 HS (Promega) run on the AB 3130 Genetic Analyzer. All kits were run using the same sample sets and included the analysis of sensitivity, precision, reproducibility, non-probative casework, stochastic issues (drop-in and drop-out), peak height ratios (PHRs), stutter percentages, calling thresholds, and mixture interpretation. Additionally, all kits were used to amplify Promega's four PowerPlex® 16 HS Challenge samples. These kits have been validated according to the FBI/National Standards and SWGDAM guidelines.

The results demonstrate significant performance improvements with Identifiler® Plus, and PowerPlex® 16 HS in respect to PCR inhibition and lower template amounts compared to the AmpF!STR® Identifiler® kit. In addition, the data supports the assertion that the use of the MiniFiler™ kit can increase the likelihood of obtaining additional STR information from forensic samples in situations in which standard STR chemistries fail to produce complete profiles. The benefits and limitations of each kit were reviewed. Based on the results obtained, a new standard kit was chosen and new guidelines for the interpretation of DNA STR profiles were drawn up for use in forensic casework for the Utah Bureau of Forensic Services.

Validation, PowerPlex® 16 HS, Identifiler Plus