AUTOMATICALLY LOWER YOUR INHIBITIONS AND INCREASE YOUR SENSITIVITY: POWERPLEX®16 HS VALIDATION ON A HAMILTON STARLET® LIQUID HANDLING WORKSTATION

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An automated, feature-rich and easily implemented procedure was developed and validated to setup forensic casework DNA amplifications, using Promega's PowerPlex® 16 HS short tandem repeat (STR) kit and a Hamilton STARlet® liquid handling workstation. The following validation criteria were addressed in accordance with SWGDAM (Scientific Working Group on DNA Analysis Methods) guidelines and FBI Quality Assurance Standards: NIST (National Institute of Science and Technology) Concordance, Reproducibility and Precision, Stutter, Contamination Monitoring, Sample Tracking, Stochastics, Non-probative and Known Sample Testing, Sensitivity, and Mixture studies.

The latest autosomal STR human identification kit in the forensic scientist's toolbox is Promega's PowerPlex® 16 HS (PP16 HS) kit. Unlike other kits, PP16 HS includes a "Hot Start" Taq Polymerase in the reaction mix, resulting in a simplified amplification setup that also facilitates automation. When commonly encountered inhibitors were present in DNA extracts, the PP16 HS STR kit also demonstrated superior performance over other commercially available chemistries.

Hamilton Robotics STAR line® of automated liquid handling workstations employs innovative but proven air-displacement pipetting technology, the same as used in high-precision hand-held electronic pipettors. This robust technology delivers superior pipetting performance for successful automation of challenging forensic methods and features Hamilton's unique Total Aspiration and Dispense Monitoring (TADM) for real-time recording of the pipetting process, thereby ensuring analytical integrity of the forensic sample. These and other engineering advances make the Hamilton STARlet® liquid handling workstation an excellent choice for automation in forensic DNA laboratories.