B75 Automated Sample Processing and Tracking System for DNA Profiling of Single Source Samples

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The goal of this presentation is to demonstrate to the forensic community the usefulness of a tracking system and automated robotic platforms for DNA analysis of single source samples in large volume.

This presentation will impact the forensic community and/or humanity by describing the usefulness of a tracking system and automated robotic platforms for DNA analysis of single source samples in large volume.

The number of samples for DNA profiling has increased exponentially due to the acceptance of short tandem repeats (STRs) in forensic casework analysis and in the court system. High volume sample processing is increasing in importance in forensic laboratory, particularly for single-source samples in data base studies.

The authors have designed an integrated LIMS system for tracking samples with respect to processing status, completion of the results, data acceptability, and generation of reports for ease of review. The samples are processed using Wallac DBS puncher and the extraction is performed using Qiagen BioRobot 8000DNA extraction system. Qiagen BioRobot 8000 Liquid Handling System is used for set up of fluorometric DNA quantitation, normalization of extracted DNA and PCR set up. PCR amplification is carried using 9700 GeneAmp® PCR System, fragment analysis is performed on 3100 Genetic Analyzer, and genotyping is performed with Genotyper®. All instrument platforms are compatible and interact with the LIMS software. The information required and generated at each processing station is integrated in the LIMS database. Use of robotic platforms involves minimal manual intervention and facilitates high-throughput sample processing in 96-well format.

The designed system for automated sample processing and tracking minimizes the potential for error and maximizes the efficiency of DNA profiling of single source samples in high volume.

Automation, DNA, Robotic