## B162 Validation of HID Evolution™ System: Automation and Integration of Quantification and STR Analysis for High Throughput Sample Processing

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After attending this presentation, attendees will learn about a validated, automated work flow for DNA quantification, normalization and PCR set-up for STR analysis of forensic type samples. The automated work flow is applicable for low, medium, and high throughput casework laboratories.

This presentation will impact the forensic science community by demonstrating automation and integration of quantification, normalization and PCR set up for STR analysis.

Automation has become an important tool in meeting increasing workload needs and reducing turnaround time in the forensic laboratory while maintaining precise and accurate sample processing and minimizing the opportunity for errors. Optimized protocols have been developed with the HID EVOlution™ System to automate and integrate the quantification set-up and data with STR analysis. The HID EVOlution™ System will track and facilitate sample information and data transfer from the quantification, normalization and PCR set up steps and instrumentation eliminating the need for manual processing and calculations and repetitive data entry. The reagent and instrument configurations for the automated system include a Tecan Freedom EVO® 150 for liquid handling, the 7500 Real Time PCR System for DNA quantification with the Quantifiler® DNA quantification kits, the AmpFℓSTR® PCR Amplification kits with the GeneAmp® PCR System 9700 for STR amplification, and the 3130*xl* Genetic Analyzer for the detection of amplified STR fragments.

This presentation summarizes the work performed to optimize and validate the HID EVOlution™ System for DNA quantification and STR profiling using the Quantifiler® Human and Y DNA Quantification Kits and the AmpFℓSTR® PCR Amplification Kits e.g Identifiler®, Yfiler®, MiniFiler™, SGM Plus®, Profiler Plus®, COfiler®, and SEfiler™ kits. Reproducibility, accuracy and contamination studies were performed on forensic DNA sample extracts and included real-time PCR set up for DNA quantification, DNA extract normalization for sample specific, user defined input amounts, STR amplification reaction set up, and STR amplification products for analysis using capillary electrophoresis to confirm the liquid handling system is fit for purpose. HID EVOlution™ System provides an optimized and comprehensive solution to process forensic samples that will increase throughput, reduce turnaround time, streamline sample information and data transfer and minimize errors while maintaining the integrity of the samples.

**Automated DNA Analysis, STR Analysis, DNA Quantification**

 ** Presenting Author*