B115 Internal Validation of a Quantifiler® Trio Setup Method on the Hamilton® Microlab® Sequential Transfer and Aliquotting Robot (STAR)

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After attending this presentation, attendees will have a better understanding of the importance of increased automation in the forensic DNA laboratory workflow, specifically as it relates to Quantifiler® Trio set up on the Hamilton® STAR.

This presentation will impact the forensic science community by demonstrating that the Hamilton® STAR has the capability to set up a 96-well plate for quantitation and achieve reliable results that are comparable to those obtained manually and perhaps even more precisely than a manual setup. This presentation will also highlight the benefits of combining different automated methods on the STAR in order to create a more seamless process with less analyst intervention, leading to fewer opportunities for contamination or human error.

The Hamilton® Microlab® STAR is an automated liquid-handling robot that can be programmed to perform a variety of tasks, such as extraction, quantitation set up, normalization, amplification set up, and capillary electrophoresis set up, in the forensic DNA workflow. Robots such as the Hamilton® STAR are useful in forensic DNA laboratories because they reduce the risk of contamination between samples and increase the precision of pipetting. The use of air-displacement pipetting reduces the risk of contamination presented by liquid-displacement pipetting used in some other robots. The Hamilton® STAR also reduces the amount of bench work time for analysts, allowing more time for analyzing data and technical review, which are the major bottlenecks in most forensic DNA laboratories. The use of a worksheet that establishes each sample's destination allows flexibility of sample processing, and a barcode reader for samples adds a second check that prevents sample mix-up. The Hamilton® STAR is able to process up to 96 samples at once, which allows for more samples to be processed in less time than with manual preparation. With increased automation in their workflow, forensic DNA laboratories can increase their efficiency, thereby reducing case turnaround time.

In this presentation, the quantitation set up method developed by Sorenson Forensics® was validated for use on the Hamilton® STARs currently used by the New York City Office of Chief Medical Examiner's Department of Forensic Biology. The internal validation study was conducted in accordance with the Scientific Working Group on DNA Analysis Methods (SWGDAM) guidelines, including cross contamination, volume verification, and precision studies as well as manual and robot-to-robot comparison studies. In addition, automation workflow strategies for large metropolitan forensic DNA laboratories will be discussed.

Hamilton® STAR, Automation, Quantitation