

## **SIGNIFICANTLY INCREASING THROUGHPUT FOR DNA Y-SCREENING OF SEXUAL ASSAULT EVIDENCE, FACILITATED BY 96-well PLATE PROCESSING**

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Backlogs of untested sexual assault evidence kits have become a priority for U.S. law enforcement agencies in recent years. Y-screening with DNA is growing as the fastest and most sensitive solution for detecting male DNA in sexual assault evidence kits and estimating the probability of obtaining a suspect profile from the collected evidence. Advancements in direct-amplification chemistries and robotics are continually being made though much continues to be relatively labor intensive and in single tube form. To further decrease processing time, evidence samples could be processed in 'plate format' (usually 96 well) to reduce cumbersome manual manipulations. This, however, is usually avoided by laboratories because of the risks of sample-switching, cross-contamination, pipetting obstacles when evidence substrates are present, and sample tracking.

Sorenson Forensics has evaluated several approaches to mitigate these risks and developed and tested a novel, high-throughput Y-screening workflow. It utilizes the newly developed Promega Casework Direct™ kit, PowerQuant™ DNA quantitation system, and SlicPrep™ 96 devices. This new process employs robotic liquid handling and a new instrument specifically designed to assist with sample preparation in 96-well evidence plates and LIMS-integrated sample tracking. Implementing these components, laboratories could potentially see an estimated four-fold increase or greater in DNA Y-screening throughput along with increased Y chromosome detection sensitivity while maintaining the ability to perform immunographic-based semen and saliva serology testing when required.