

## NOVEL Y-SCREEN AND DIRECT AMPLIFICATION ASSAY USING THE QUANTIFILER™ TRIO DNA QUANTIFICATION KIT

Allison Holt, Siddhita Gopinath, S. Olson, Thermo Fisher Scientific

Sexual Assault Kit (SAK) samples are among the most difficult sample types encountered by many forensic laboratories. Screening SAK evidence can take 4-6 hours and there may be wide variation among the type and age of samples collected, which can require further analysis time. For many laboratories, SAKs represent a high percentage of current and backlogged cases and often yield no presence of male DNA, when analyzed downstream by autosomal and Y STR amplification.

To assist in the decision making process of whether to take a sample forward to differential extraction, we have developed a novel DNA screening workflow allowing customers to rapidly assess whether swab evidence from an SAK contains a male contributor prior to the standard labor-intensive differential extraction procedures used in forensic laboratories. In conjunction with other presumptive serological and microscopic slide screening methods, the Y-screen assay allows the laboratory to confirm serology results, and is an effective tool for detecting male/sperm DNA when slide-screening results are questionable. This Y-screen assay starts with a small cutting of an SAK swab placed into a buffer which lyses cells (including sperm) in only 10 minutes. This is immediately followed by a quick neutralization step and dilution before addition to the Quantifiler™ Trio assay. We show that the sensitivity of the assay correlates well to the results obtained from several commonly used differential extraction procedures.. As a new feature, we have added an optional direct amplification step to the protocol. We show that the lysate from the Y-screen assay may be used in downstream STR analysis. We show results with both the GlobalFiler™ and the Yfiler™ Plus assays. This Y-screen assay solves important sample screening and processing problems, allowing forensic laboratories to more rapidly process SAK samples and therefore helps to assist in decreasing overall SAK turnaround times and backlogs.

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