

SUMMARY RESULTS OF A BLINDED STUDY ON THE EFFECTIVENESS AND EFFICIENCY OF USING SPERM HY-LITER™ TO SCREEN SEXUAL ASSAULT EVIDENCE FOR SPERM.

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The identification of sperm is often a requirement of forensic DNA analysis for the processing and evaluation of sexual assault evidence. SPERM HY-LITER™ is a new immunofluorescent detection kit specifically designed for forensic DNA laboratories. This kit uses a fluorescent tagged mouse monoclonal antibody with unique specificity for human sperm heads. The sensitivity of the test is such that a single sperm is easily and quickly identified on a microscope slide.

Forensic laboratories are naturally, and appropriately, skeptical of new and emerging technologies. At the request of the Department of Forensic Genetics of the Danish National Institute for Legal Medicine (the centralized forensic DNA laboratory of Denmark), Independent Forensics agreed to perform a blinded study on the specificity, sensitivity and work flow efficiency of SPERM HY-LITER™ for the microscopic screening of sperm from sexual assault evidence.

The Danish National Institute for Legal Medicine (DNILM) prepared a duplicate series of swabs and stains with forty-four (44) samples prepared from a variety of sources including duplicate cuttings from sexual assault evidence kits retained at the Danish National Institute for Legal Medicine. All samples were blinded and number coded to both laboratories. An identical protocol for the extraction, processing and staining of all samples was chosen prior to testing – the provided SPERM HY-LITER™ protocol was followed with the addition of a short, water-bath sonication extraction step and Spin-Eze™ aided recovery of the resultant cell pellet. The Department of Forensic Genetics used both SPERM HY-LITER™ staining and their standard histological staining (i.e., H&E) for the evaluation of all samples.

Upon completion of the testing and the exchange of data, sample codes were revealed. Sample types tested and evaluated included negative controls, low sperm count samples, dense samples, epithelial, vaginal, washed semen stains, mixtures of blood, menstrual blood, soil, saliva, and bacterial with seminal fluid all formed part of the tester set.

Data comparison of the three sets of samples (SPERM HY-LITER™ staining at IFI, SPERM HY-LITER™ staining at DNILM, and H&E staining at DNILM) revealed that SPERM HY-LITER™ was clearly the most sensitive of the staining methods.

The most dramatic result of the study is the time savings seen with SPERM HY-LITER™: the two weeks required by DNILM to stain and scan the forty-four samples using their standard H&E histological method was reduced to three (3) days with SPERM HY-LITER™. This represents an 80% time saving with increased sensitivity as compared to standard forensic technique.