B4 Optimization of Spermatozoa Capture During the Differential Extraction Process for STR Typing With the Potential for Automation

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After attending this presentation, attendees will learn about a new method of spermatozoa capture that could enhance the differential extraction process already in place in most crime laboratories and learn about the research involved in this method

This research project shows tremendous potential as a new and improved method for obtaining a complete and separate sperm fraction from sexual assault samples. It could lead to an automated method, establishing a faster technique for the differentiation of sexual assault samples, and could be a tremendous breakthrough in the backlog of cases most states are currently facing.

In 1998, within the United States, it is estimated that a rape occurred every 2.3 minutes. In 1995, according to the Bureau of Justice Statistics, an estimated 350,000 rapes or sexual assaults (R/SA) were experienced by persons age 12 or older. Of the estimated 100,000 R/SA reported, there were only approximately 25,000 cases analyzed by crime labs nationwide. The majority of crime laboratories throughout the U.S., especially those in major metropolitan cities, have a significant backlog of unresolved R/SA cases. With the implementation of the Convicted Offender Database (CODIS), it is essential that all R/SA cases be analyzed, especially those lacking a known suspect. The comparison of the short tandem repeat (STR) profiles derived from sperm DNA recovered from evidentiary material with CODIS samples would provide the police with critical investigative leads resulting in the identification of the assailant.

The goal of this research is to develop a cellular sorting method for the isolation of the sperm cells from sexual assault samples which will: 1) take advantage of additional differentiating cellular features (extracellular antigenic sites) so that the separation of the cell types will be complete, 2) provide a more efficient means of sperm recovery, and 3) utilize commercially available equipment for the automation of the entire process, resulting in a cost effective and more reliable process. Overall, the proposed technique will increase the probability of success in the analysis of sexual assault case samples. (NIJGrant #: 2000-IJ-CX-K009).

Differential Extraction, Sexual Assault, Short Tandem Repeats