

Y-SCREENING: THE NEW METHOD THAT TURNS YOUR MICROSCOPE INTO A PAPERWIEGHT

Stephanie Masters

Sorenson Forensics, Salt Lake City, UT

Serological screening to detect biological fluids that indicate the presence of male DNA is an important aspect of forensic casework, especially in cases where sexual assault has occurred. Traditional serology methods can be both time consuming and labor intensive making Sexual Assault Kits a large part of a Crime Laboratory's backlog. Improved DNA extraction and detection methods have given rise to faster and more sensitive male DNA detection processes. In this report we describe a rapid and sensitive technique to screen for the presence of male DNA that combines Chelex extraction with Promega's Plexor HY quantitative PCR (QPCR). Studies using serial dilutions of both semen and saliva revealed that this technique is two to eight times more sensitive in detecting male DNA compared to traditional serological methods. Chelex-Plexor HY screening of mock sexual assault samples detected male DNA a full 72 hours post intercourse when traditional serology could not. Additionally, both in sensitivity studies and non-probative casework studies, a value of zero (N/A) by Chelex-Plexor HY screening yielded no DNA profile, both in YSTR and STR testing. These results suggest the Chelex-Plexor HY screening technique is sensitive enough to detect minute levels of male DNA and provides a reliable base from which STR amplification decisions can be made. The results of this study show a higher quality and much more rapid technique for assessment of Sexual Assault Evidence Kit processing by Forensic DNA Crime Laboratories.