

VALIDATION OF A Y-CHROMOSOME STR 10-PLEX

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Y-chromosome microsatellite markers (Y-STRs) provide valuable information in cases of rape and questioned paternity, and they allow for the genetic identification of males. The present study validated a Y-STR 10-plex on the ABI Prism® 3100 Genetic Analyzer for use in forensic and paternity laboratories at Orchid Cellmark. Following optimization of the polymerase chain reaction, father-son pairs were analyzed to ensure that each pair generated identical haplotypes. The mutation rate varied between 0-0.0238 (+/- 0.046, 95% confidence interval). The present study demonstrated that the 10-plex is sensitive to 0.75 ng input DNA and that female samples mixed with male samples did not interfere with Y-STR haplotyping. A population database of 525 males was developed and subsequently analyzed. Three instances of locus multiplication were observed, two at DYS19 and one at DYS435. Overall haplotype diversity was 0.996, suggesting that the 10-plex can efficiently distinguish male Y-STR profiles.