POPULATION STUDIES ON THE SIX HUMAN Y-SPECIFIC STR LOCI IN KOREANS USING SINGLE MULTIPLEX SYSTEM

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Y-specific STR markers are known as useful tools for population genetics, evolutionary and forensic applications. Population database for Y-STRs is necessary for matching probability calculations in forensic casework. In this study, we present results on the Y-specific STR loci DYS434, SYS435, DYS436, DYS437, DYS438 and DYS439 in the Korean population.

The primer sets for PCR were labeled with FAM or HEX and then a single multiplex PCR system was developed. DNA amplification was performed in 300 unrelated males and the amplicons were analyzed with the ABI PRISM® 310 Genetic Analyzer (Applied Biosystems) for population studies. By combining alleles from the samples, sequenced allelic ladders for accurate and reproducible STR typing were constructed, followed by analysis of the DNA sequence for each allele at six Y-STR loci.

As a result, gene diversity ranged from 0.102 at DYS436 to 0.672 at DYS438. Among Koreans, a total of 75 different haplotypes were observed and the cumulative haplotype diversity was 0.939. Haplotype diversity of six Y-STRs is not comparable to that of European Y-STRs. But when combining two sets of Y-STRs system, increased haplotype diversity is expected. Therefore, this Y-STR set may be informative to not only forensic investigation but also kinship casework using with the European Y-STRs set simultaneously.