



## Allele frequencies of eight STR loci in a Japanese population detected by the fluorescent image analyzer

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Population studies on eight short tandem repeat (STR) loci D16S539, D7S820, D13S317, D5S818, CSF1PO, TPOX, TH01, and vWA were carried out in a sample of 460 unrelated Japanese individuals living in the Gifu Prefecture (central region of Japan).

The eight loci were co-amplified using the *GenePrint*<sup>™</sup> PowerPlex<sup>™</sup> Fluorescent STR system (Promega). The amplified products were electrophoresed using 4% denaturing polyacrylamide. After the electrophoresis, the gels were scanned on a FMBIO II Multi-View fluorescent image analyzer (Hitachi Software Engineering) and the fluorescent DNA bands of the eight loci were detected simultaneously. The fragment sizes of the bands were determined using FMBIO Analysis Software (Hitachi Software Engineering) and typed using Excel STaRCaLL Genotyping Software (Hitachi Software Engineering).

The following allele frequency ranges were found: D16S539: seven alleles with frequencies ranging from 0.002 (allele 8) to 0.329 (allele 9); D7S820: eight alleles with frequencies ranging from 0.003 (allele 14) to 0.316 (allele 11); D13S317: eight alleles with frequencies ranging from 0.001 (allele 7) to 0.265 (allele 8); D5S818: 10 alleles with frequencies ranging from 0.003 (alleles 6, 7, and 15) to 0.263 (allele 11); CSF1PO: eight alleles with frequencies ranging from 0.003 (allele 15) to 0.396 (allele 12); TPOX: six alleles with frequencies ranging from 0.003 (allele 14) to 0.463 (allele 8); TH01: six alleles with frequencies ranging from 0.005 (allele 10) to 0.399 (allele 9); vWA: nine alleles with frequencies ranging from 0.002 (allele 21) to 0.279 (allele 17). The combined power of discrimination (PD) for the eight loci was 0.999999992 and the mean exclusion chance (MEC) 0.998. For all loci, no deviations from Hardy–Weinberg expectations were detected using the homozygosity, the likelihood ratio, and the exact tests. The results indicate that these eight loci are useful genetic markers for forensic personal identification and paternity testing in the Japanese population.

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