

NEW HUMAN IDENTIFICATION KIT WITH 17 MARKERS USING SHORT TANDEM REPEAT (STR) ANALYSIS

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Objective: In modern forensics, scientists use 13 to 24 short tandem repeats (STRs) markers for forensic investigations, paternity indexing, etc. To create unique DNA profiles for different purposes. Our new human profiling kit with 17 loci, provides fast and accurate profile which is compatible with Iranian gene pool.

Design & Method: We selected genomic regions related to 16 markers used in AmpFISTR Identifier kit (Life Technologies, ABI, USA) namely D8S1179, D21S11, D7S820, CSF1PO, D3S1358, TH01, D13S317, D16S539, D2S1338, D19S433, VWA, TPOX, D18S51, Amelogenin, D5S818, FGA. In addition we used SE33 STR marker which has been shown to have high heterozygosity in Iranian population. This locus is used in NGM Select and GlobalFiler kits. New primers were designed and labeled with fluorescent dyes to be optimized for multiplex PCR. Size and fluorescent dye of all markers were designed to be completely different to aid international marketing. To make a suitable ladder for the newly invented kit, DNA profile data of 10,000 individuals were used. Different alleles were synthesized by their DNA that was extracted from DBC cards. Then the alleles were mixed together to make a ladder with most efficiency.

Results: DNA profiles of 200 individuals were compared with the profile of ABI kit. Both of them had the same result.

Conclusion: As foreign kits are used in Legal Medicine Org. (LMO) and Police Dep't, therefore we used same markers in this kit in addition to SE33 to improve its power of discrimination. Kit performance was as expected and was acceptable enough to compete with imported ones.

Key words: Human Identification (HID), Short Tandem Repeats (STRs), Legal Medicine Org. (LMO)