A142 Developement of a New Autosomal STR Multiplex System as a Supplemental Tool With Other Commercial Kits

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After attending this presentation, attendees will be introduced to the developement of a new autosomal STR multiplex system.

This presentation will impact the forensic science community by comparing a supplemental tool with other commercial kits.

A newly developed and highly discriminating fluorescent dye labeled short tandem repeat (STR) multiplex PCR set, which includes 4 non-CODIS loci (D1S1612, D15S659, D11S1978, and D22S691) plus the sex-typing marker amelogenin gene, was developed as part of this study. The new autosomal STR quadruplex plus amel set was performed in one reaction. The amelogenin primers used in this set were different from those commonly used in commercial kits. Sequence analysis confirmed the allele and allele assignment was performed by comparision with the ladder for each locus.

Optimal PCR conditions were determined in singleplex for each locus and the locus combined to a set. This set of a quadruplex plus amel had allele size range of ~97 base pairs (bp) to ~356bp, with the size of amelogenin ranging from ~220bp to ~226bp. The allelic distribution was surveyed using the population DNA from 300 unrelated Koreans and the mutation rate of each locus was determined by pedigree analysis of Korean families.

The combined probability of identity (PI) value from four STR loci was calculated as1.48×10^{-5} in the Korean population. This quadruplex plus amel set may be combined to a previously developed single amplification system with three other multiplex sets (12 STR loci, poster presentation # p-75 in 22th ISFG, 2007). The tests may also be used for paternity tests as a supplemental tool. This combined multiplex system includes a quadruplex plus amel set and appears to be a supplemental tool for use with other commercial STR kits in forensic casework and paternity test.

4 Non-CODIS loci, Multiplex, Korean DNA

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