

A NOVEL DIPLEX OF PENTA D AND PENTA E AND POPULATION DATA IN TAIWAN

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STR loci Penta D and Penta E were recognized as low-stutter and highly polymorphic pentanucleotide repeat loci. They would add a portion of exclusion probability for the paternity disputes and also increase the discriminating probability for forensic identification. Penta D and Penta E were profiles on 532 unrelated Chinese individuals and from routine paternity cases in Taiwan. PCR amplification was performed by using the PowerPlex® 16 System kit. In this study only data for Penta D and Penta E were presented.

No significant deviation from Hardy-Weinberg equilibrium was found in these systems. The most frequent allele types for each locus were Penta D: 9(34.15%), Penta E:11(16.51%). The mean exclusion power(MEP) for Penta E(81.92%) was larger than that of Penta D(60.16%), and the DP for Penta E(98.6%) was also larger than that of Penta D(93.7%).

When processing paternity test if only the alleged father was willing to be tested, the CPI was found not high enough sometimes, but if typing results of Penta D and Penta E were added, the CPI would increase accordingly, cases were presented with the increase of CPI from about 7 to 17 times. In order to solve some mutation cases and increase CPI, we decided to develop the diplex primers for the markers Penta D and Penta E.

The original sequences of Penta D and Penta E were obtained from NCBI, and primers were designed to be close to the STR area, the amplicon range of the diplex was 186-269bp and 268-373bp respectively, differing from commercial amplicon size 376-459bp and 379-484bp. With the decrease in amplicon size, we found this miniplex can increase success rates in some degraded specimens. The two Penta STR loci described here with high MEP and PD are highly suitable for forensic individualization.