FORENSIC APPLICATION OF POWERPLEX™ 1.2 IN CHINESE POPULATION

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A Polymerase Chain Reaction-based multiplex Short Tandem Repeats system PowerPlex™1.2 (produced by Promega Corporation) has been introduced in China for use in routine forensic identity testing recently. This kit consists of eight STR loci, vWA, TH01, TPOX, CSF1PO, D5S818, D7S820, D13S317, D16S539, and Amelogenin locus for sex identification. Fluorescent dye-labeled amplification products were able to detect with ABI™ PRISM® 377XL Sequencer and analyzed with software GeneScan® 2.0 and Genotyper® 2.0. A study of Chinese population was carried out with PowerPlex™ 1.2. Through statistical analysis, allele frequencies were determined for eight loci, no deviation from Hardy-Weinberg equilibrium has been found, this multiplex system could provide a power of discrimination above 0.999999931 in the Chinese population. Over three hundred forensic cases containing individual identity and paternity testing were analyzed with the PowerPlex™ 1.2 rapidly, efficiently and precisely.

STATISTICAL ANALYSIS DATA IN THE CHINESE POPULATION

CTTv STR LOCI

LOCUS	TH01		TPOX		CSF1PO		vWA	
	A	F	A	F	A	F	A	F
	6	0.1083	7	0.0042	7	0.0042	14	0.2364
	7	0.2375	8	0.4792	9	0.0708	15	0.0408
	8	0.0667	9	0.1167	10	0.2333	16	0.1467
	9	0.4917	10	0.0292	11	0.2667	17	0.2473
	9.3	0.0125	11	0.3333	12	0.3083	18	0.1984
	10	0.0833	12	0.0333	13	0.0833	19	0.1087
			13	0.0042	14	0.0292	20	0.0217
					15	0.0042		
DP	0.8552		0.8114		0.9082		0.9354	

Gamma STR LOCI

LOCUS	D5S818		D7S820		D13S317		D16S539	
	A	F	A	F	A	F	A	F
	7	0.014	8	0.1287	8	0.2682	8	0.0139
	8	0.0056	9	0.0842	9	0.1273	9	0.3102
	9	0.073	10	0.1535	10	0.15	10	0.1157
	10	0.1798	11	0.297	11	0.2591	11	0.25
	11	0.3539	12	0.2624	12	0.1682	12	0.1991
	12	0.2444	13	0.0693	13	0.227	13	0.1065
	13	0.1152	14	0.005	14	0.0045	14	0.0046
	14	0.0084						
	15	0.0056						
DP	0.9089		0.926		0.9259		0.9153	

*A: allele
F: frequency
DP: power of discrimination