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FOR THE RECORD

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Polymorphism Analysis of Y-Chromosomal Haplotypes in the Chinese Han Population Living in the Shaanxi Province of China

POPULATION: Chinese Han population living in the Shaanxi Province of China.

KEYWORDS: forensic science, DNA typing, polymorphism analysis, Y-chromosomal haplotypes, Chinese Han population living in the Shaanxi province of China, population genetics, DYS19, DYS389II, DYS390, DYS391, DYS393, DYS385, Y-PLEX^{TM} 6 kit, China

All whole-blood samples were obtained from 137 unrelated male individuals of the Chinese Han population living in the Shaanxi province of China. Genomic DNA was extracted using the Chelex-100 protocol as described by Walsh et al. (1). Six Y-chromosomal STRs loci (DYS19, DYS389II, DYS390, DYS391, DYS393, and DYS385) were performed in a fluorescence-based multiplex reaction using the Y-PLEX^{TM}6 kit (Reliagene Technologies Inc., New Orleans, LA). The amplification reactions of 12.5 μL in total contained 2.5 μL of 5 × Y-PLEX^{TM} 6 Primer Mix, 0.25 μL of AmpliTaq Gold DNA polymerase (Reliagene Technologies Inc., New Orleans, LA) (5 u/μL), 7.25 μL of deionized water, and 2.5 μL of genomic DNA. Thermal cycling was conducted using the following conditions: 95°C for 10 min; 30 cycles of 94°C for 30 sec, 59°C for 1 min, 70°C for 1 min; and a final extension of 60°C for 60 min using GeneAmp PCR system 9700 (Applied Biosystems, Foster City, CA) (2). Detection and genotyping of all PCR products were accomplished using an ABI 3100 DNA Genetic Analyzer (Applied Biosystems). Haplotype and allele frequencies were estimated by the direct counting method (Tables 1 and 2). Haplotype and gene diversities were estimated according to Nei (3). Twenty-seven alleles (five STR loci) and 35 phenotypes (DYS385) were detected in the Chinese Han population. Out of a total of 137 individuals, 130 showed different haplotypes, while seven haplotypes occurred more than once. The overall haplotype diversity for 6Y-STRs loci was 0.9993, and the discrimination capacity was 0.9919.

The complete data set is available via electronic mail from the corresponding author: xingjpcn@163.com or xingjp-mr@vip.sina.com.

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TABLE 1—*Y-chromosomal STR haplotypes in 137 unrelated male individuals of Chinese Han population.*

Haplotype	*n*	Frequency	DYS19	DY389II	DYS390	DYS391	DYS393	DYS385
H1	1	0.0073	12	28	24	9	14	15,15
H2	1	0.0073	12	30	25	10	13	11,19
H3	1	0.0073	13	28	23	10	12	13,20
H4	1	0.0073	13	29	24	8	14	16,20
H5	1	0.0073	13	29	25	9	14	15,15
H6	1	0.0073	13	30	23	9	14	15,20
H7	1	0.0073	13	30	23	10	14	11,13
H8	2	0.0146	13	30	24	9	14	15,15
H9	1	0.0073	14	20	23	10	14	11,13
H10	1	0.0073	14	27	23	10	12	13,19
H11	1	0.0073	14	28	21	10	14	11,14
H12	1	0.0073	14	28	23	10	12	11,13
H13	1	0.0073	14	28	23	10	12	12,19
H14	1	0.0073	14	28	23	10	12	13,13
H15	1	0.0073	14	28	23	10	14	13,14
H16	1	0.0073	14	28	23	11	12	13,16
H17	2	0.0146	14	28	24	10	12	13,18
H18	1	0.0073	14	28	24	11	13	11,12
H19	1	0.0073	14	28	24	11	13	12,12
H20	1	0.0073	14	28	25	10	12	14,19
H21	1	0.0073	14	28	25	11	13	12,17
H22	1	0.0073	14	29	23	10	12	14,14
H23	1	0.0073	14	29	23	10	13	12,13
H24	1	0.0073	14	29	23	10	13	12,14
H25	1	0.0073	14	29	23	10	14	11,12
H26	1	0.0073	14	29	23	11	13	11,14
H27	1	0.0073	14	29	23	11	13	13,16
H28	1	0.0073	14	29	23	11	14	11,13
H29	1	0.0073	14	29	24	10	12	13,18
H30	1	0.0073	14	29	24	10	12	15,17
H31	1	0.0073	14	29	25	9	12	16,17
H32	1	0.0073	14	30	22	10	14	11,12
H33	1	0.0073	14	30	23	10	12	11,14
H34	2	0.0146	14	30	23	10	13	12,13
H35	1	0.0073	14	30	23	10	13	12,14
H36	1	0.0073	14	30	23	11	13	11,12
H37	1	0.0073	14	30	24	10	13	15,17
H38	1	0.0073	14	30	24	11	13	11,14

TABLE 1— *Continued.*

Haplotype	*n*	Frequency	DYS19	DY389II	DYS390	DYS391	DYS393	DYS385
H39	1	0.0073	14	30	25	10	12	13,18
H40	1	0.0073	14	31	24	10	13	10,12
H41	1	0.0073	14	31	24	10	13	12,17
H42	1	0.0073	14	32	24	9	13	12,12
H43	1	0.0073	15	20	23	9	14	11,18
H44	1	0.0073	15	26	23	10	12	12,16
H45	1	0.0073	15	27	22	10	12	12,17
H46	2	0.0146	15	27	23	10	12	12,13
H47	1	0.0073	15	27	23	10	13	13,20
H48	2	0.0146	15	27	24	10	12	12,15
H49	1	0.0073	15	28	22	11	14	11,12
H50	1	0.0073	15	28	23	9	12	12,18
H51	1	0.0073	15	28	23	10	12	11,12
H52	1	0.0073	15	28	23	10	12	12,12
H53	1	0.0073	15	28	23	10	12	12,18
H54	1	0.0073	15	28	23	10	12	13,13
H55	1	0.0073	15	28	23	10	13	12,12
H56	1	0.0073	15	28	23	11	13	11,12
H57	1	0.0073	15	28	24	10	11	14,18
H58	1	0.0073	15	28	24	10	12	11,12
H59	1	0.0073	15	28	24	10	12	13,13
H60	1	0.0073	15	28	24	10	13	13,13
H61	1	0.0073	15	28	24	11	13	12,18
H62	1	0.0073	15	28	25	10	12	12,19
H63	1	0.0073	15	28	25	10	12	13,19
H64	1	0.0073	15	28	25	10	14	11,17
H65	1	0.0073	15	28	26	10	13	12,18
H66	1	0.0073	15	29	22	10	12	12,12
H67	1	0.0073	15	29	23	9	14	12,12
H68	1	0.0073	15	29	23	10	12	11,18
H69	1	0.0073	15	29	23	10	12	12,12
H70	1	0.0073	15	29	23	10	12	12,16
H71	1	0.0073	15	29	23	10	13	13,13
H72	1	0.0073	15	29	23	10	15	11,19
H73	1	0.0073	15	29	23	11	12	12,16
H74	1	0.0073	15	29	23	11	12	12,17
H75	1	0.0073	15	29	23	11	12	13,13
H76	1	0.0073	15	29	23	11	13	12,14
H77	1	0.0073	15	29	23	11	13	13,13
H78	1	0.0073	15	29	23	11	13	13,14
H79	1	0.0073	15	29	24	10	12	16,16
H80	1	0.0073	15	29	24	10	14	12,17
H81	1	0.0073	15	29	25	10	12	16,17
H82	1	0.0073	15	29	25	10	13	11,11
H83	1	0.0073	15	29	25	11	12	14,16
H84	1	0.0073	15	30	23	10	13	13,14
H85	1	0.0073	15	30	23	10	14	11,17
H86	1	0.0073	15	30	23	10	14	11,18
H87	1	0.0073	15	30	23	11	14	13,17
H88	1	0.0073	15	30	24	10	12	12,12
H89	1	0.0073	15	30	24	10	12	12,16
H90	1	0.0073	15	30	24	10	13	13,13
H91	1	0.0073	15	30	24	10	13	13,15
H92	1	0.0073	15	30	24	10	15	11,18
H93	1	0.0073	15	30	24	11	12	13,13
H94	1	0.0073	15	30	25	10	12	12,16
H95	1	0.0073	15	30	25	10	13	11,14
H96	1	0.0073	15	31	23	10	12	12,16
H97	1	0.0073	15	31	23	10	14	13,17
H98	1	0.0073	15	31	24	10	12	12,18
H99	1	0.0073	15	31	24	10	12	14,14
H100	1	0.0073	15	31	25	11	13	11,14
H101	1	0.0073	15	32	23	10	14	11,11
H102	1	0.0073	15	32	24	10	13	12,15
H103	1	0.0073	16	27	24	10	12	13,20
H104	1	0.0073	16	27	25	10	12	14,17
H105	1	0.0073	16	28	22	10	11	11,11
H106	1	0.0073	16	28	22	10	12	12,14
H107	1	0.0073	16	28	23	10	12	12,17
H108	1	0.0073	16	28	25	10	12	11,12
H109	1	0.0073	16	28	25	10	12	12,19
H110	2	0.0146	16	28	25	10	12	12,19

TABLE 1— *Continued.*

Haplotype	*n*	Frequency	DYS19	DY389II	DYS390	DYS391	DYS393	DYS385
H111	1	0.0073	16	29	22	10	11	11,12
H112	1	0.0073	16	29	22	10	14	11,11
H113	1	0.0073	16	29	22	11	13	12,12
H114	1	0.0073	16	29	23	10	15	11,17
H115	1	0.0073	16	29	23	11	14	12,17
H116	1	0.0073	16	29	24	10	14	12,14
H117	1	0.0073	16	29	24	10	15	11,12
H118	2	0.0146	16	29	24	11	12	13,19
H119	1	0.0073	16	29	25	10	12	12,12
H120	1	0.0073	16	29	25	10	12	13,16
H121	1	0.0073	16	29	25	10	12	14,18
H122	1	0.0073	16	30	23	10	14	11,19
H123	1	0.0073	16	30	23	11	14	11,11
H124	1	0.0073	16	30	24	10	11	12,18
H125	1	0.0073	16	30	24	10	15	11,17
H126	1	0.0073	16	31	23	11	12	12,17
H127	1	0.0073	17	29	24	11	12	12,17
H128	1	0.0073	17	29	25	10	12	12,12
H129	1	0.0073	17	30	25	10	12	11,11
H130	1	0.0073	17	31	23	11	13	13,14

n, number of individuals observed for each haplotype.

TABLE 2—*Allele frequencies at six Y-chromosome STRs of Chinese Han population.*

Allele	DYS19	DYS389II	DYS390	DYS391	DYS393	Phenotype	DYS385	Phenotype	DYS385
8				0.0073		11,11	0.0438	14,14	0.0146
9				0.0730		11,12	0.0803	14,16	0.0073
10				0.7007		11,13	0.0292	15,20	0.0073
11				0.2190	0.0292	11,14	0.0438	16,16	0.0073
12	0.0146				0.4672	11,17	0.0292	16,17	0.0146
13	0.0511				0.2628	11,18	0.0292	16,20	0.0073
14	0.2628				0.2044	11,19	0.0219	10,12	0.0073
15	0.4526				0.0365	12,12	0.0803	15,15	0.0292
16	0.1898					12,13	0.0365	13,15	0.0073
17	0.0292					12,14	0.0365	13,16	0.0219
22			0.0657			12,15	0.0219	14,17	0.0073
23			0.4380			12,16	0.0438	14,18	0.0146
24			0.2920			12,17	0.0657	14,19	0.0073
25			0.1971			12,18	0.0438	15,17	0.0146
26		0.0073	0.0073			12,19	0.0365		
27		0.0657				13,13	0.0657		
28		0.2774				13,14	0.0292		
29		0.3285				13,17	0.0146		
30		0.2336				13,18	0.0292		
31		0.0657				13,19	0.0292		
32		0.0219				13,20	0.0219		
GD	0.6915	0.7570	0.6847	0.4590	0.6737				0.9645

GD, gene diversity value of each Y-STR loci.

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