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FOR THE RECORD

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Haplotype Distribution of the Multi-copy Y-STR Loci DYS385, DYS459 and DYS464 in Chinese Han Population

POPULATION: Chinese Han population

KEYWORDS: forensic science, Y chromosome, DYS385, DYS459, DYS464, haplotype, Han population, DNA typing, population genetics

EDTA-blood samples were collected from 176 healthy unrelated males of Han population living in Wuhan, China. DNA was extracted using Cheles-100 method (1). PCR was performed in a total volume of 10 μL containing 2–5 ng genomic DNA, 0.2 μM each primer, 10 mM Tris-HCl buffer (pH 8.3), 50 mM KCl, 1.5 mM $MgCl_2$, 200 μM each dNTP, and 1 U AmpliTaq Gold® DNA polymerase (Applied Biosystems, Foster City, CA). DYS459 and DYS464 were co-amplified in a duplex reaction and DYS385 was amplified in a singleples reaction. Primer sequences: DYS385: 5′-FAM-agcatgggtgacagagcta-3′, 5′-gccaattacatagtcctcctttc-3′; DYS459: 5′-FAM-caggtgaactggggtaaataat-3′, 5′-gttgagcaacagagcaagactta-3′; DYS464: 5′-FAM-ctttgggctatgcctcagttt-3′, 5′-gccatacctgggtaacagagagac-3′. PCR cycling conditions: 95°C for 11 min soak, 30 cycles of 40 s at 94°C, 40 s at 60°C, 50 s at 72°C followed by a 6 min extension period at 72°C. All loci were amplified in a GeneAmp PCR System 9700 (PE Applied Biosystems).

Detection of the amplified products was carried out using an ABI PRISM® 3100 Genetic Analyzer (PE Applied Biosystems). Samples (1 μL) were mixed with Hi-Di™ formamide (12 μL) and the internal standard size (GS-500 ROX 0.4 μL) and denatured at 95°C for 5 min. GeneMapper v3.1 analysis software was used for the interpretation of the results. To all samples, our own allele ladders were used for allele designation. The gene or haplotype diversity was estimated according to Nei (2).

The complete dataset is available to any interested researcher upon request to the authors.

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TABLE 1—*Genotype frequencies and gene diversity of three multi-copy Y-STR loci in Wuhan Han population.*

DYS459		DYS385		DYS464	
Genotype	Frequency	Genotype	Frequency	Genotype	Frequency
7–9	0.1534	8–17	0.0057	11–12–15–16	0.0057
8	0.1136	9	0.0284	11–12–15–17	0.0057
8–9	0.0511	9–10	0.0284	11–13–14–15	0.0057
8–10	0.0057	9–11	0.0170	11–13–15–16	0.0057
9	0.5966	9–15	0.0114	12	0.0170
9–10	0.0568	9–16	0.0170	12–13–14	0.0284
10	0.0227	9–17	0.0341	12–13–14–15	0.0852
		9–18	0.0114	12–13–14–16	0.0455
		9–19	0.0057	12–13–14–17	0.0114
		10	0.0284	12–13–15	0.0284
		10–11	0.0057	12–13–15–16	0.0057
		10–12	0.0057	12–13–15–17	0.0057
		10–14	0.0568	12–13–16	0.0170
		10–15	0.0284	12–13–16–17	0.0057
		10–16	0.0511	12–13–17	0.0057
		10–17	0.0568	12–14–15	0.0284
		10–18	0.0227	12–14–15–16	0.0170
		10–19	0.0057	12–14–16	0.0057
		10–20	0.0057	12–14–16–17	0.0114
		10–21	0.0057	12–15	0.0114
		11	0.1250	12–15–16–17	0.0057
		11–12	0.0227	13	0.0114
		11–13	0.0057	13–14	0.1364
		11–14	0.0114	13–14–15	0.0795
		11–15	0.0227	13–14–15–16	0.0057
		11–16	0.0455	13–14–15–17	0.0114
		11–17	0.0852	13–14–15–18	0.0057
		11–18	0.0398	13–14–16	0.0227
		11–19	0.0227	13–14–16–19	0.0057
		11–20	0.0057	13–14–17	0.0114
		12–13	0.0057	13–14–17–18	0.0057
		12–14	0.0057	13–15	0.0568
		12–15	0.0227	13–15–16	0.0057
		12–16	0.0341	13–15–16–17	0.0057
		12–17	0.0170	13–15–17–19	0.0057
		12–18	0.0057	13–16	0.0114
		12–19	0.0114	13–16–17	0.0284
		12–21	0.0057	13–16–18	0.0170
		13–16	0.0057	13–17–18	0.0227
		13–17	0.0170	14–15	0.0398
		13–18	0.0170	14–15–16	0.0170
		13–20	0.0057	14–15–17	0.0057
		13–21	0.0057	14–15–18–19	0.0057
		14–18	0.0057	14–16	0.0398
		14–19	0.0057	14–16–17	0.0057
		17–18	0.0057	14–16–18	0.0057
		18	0.0057	14–17	0.0284
				15	0.0227
				15–16	0.0114
				15–17	0.0057
				16	0.0057
Gene diversity = 0.6047		Gene diversity = 0.9591		Gene diversity = 0.9560	

TABLE 2—*Haplotype distribution of three multi-copy Y-STR loci in the population studied.*

Haplotype	DYS385	DYS459	DYS464	*n*	Frequency
H1	8, 17	9	13, 16, 18	1	0.0057
H2	9	8	12, 13, 14, 16	2	0.0114
H3	9	8	12, 13, 14, 17	1	0.0057
H4	9	8	12, 13, 16	1	0.0057
H5	9	9	14, 15	1	0.0057
H6	9, 10	8	12, 13, 14, 16	2	0.0114
H7	9, 10	9	12	2	0.0114
H8	9, 10	9	13	1	0.0057
H9	9, 11	7, 9	13, 14	2	0.0114
H10	9, 11	9	12	1	0.0057
H11	9, 15	8	14, 16	1	0.0057
H12	9, 15	8, 9	13, 16	1	0.0057
H13	9, 16	8	12, 13, 14, 15	1	0.0057
H14	9, 16	8	12, 13, 14, 16	2	0.0114
H15	9, 17	8	12, 14, 15, 16	2	0.0114
H16	9, 17	8	12, 14, 16, 17	1	0.0057
H17	9, 17	9	13, 14, 15	1	0.0057
H18	9, 17	9	13, 14, 16	1	0.0057
H19	9, 17	9	13, 14, 16, 19	1	0.0057
H20	9, 18	8	16	1	0.0057
H21	9, 18	9	12, 13, 14	1	0.0057
H22	9, 19	8	12, 13, 14, 16	1	0.0057
H23	10	7, 9	13, 14, 15	1	0.0057
H24	10	9	13, 14, 15	1	0.0057
H25	10	9	14, 15	1	0.0057
H26	10	9, 10	13, 14, 15	1	0.0057
H27	10	9, 10	13, 16, 17	1	0.0057
H28	10, 11	9	13, 14, 15	1	0.0057
H29	10, 12	7, 9	13, 15	1	0.0057
H30	10, 14	9	12, 13, 16	2	0.0114
H31	10, 14	9	13, 14, 15	4	0.0227
H32	10, 14	9	13, 15	3	0.0170
H33	10, 14	9	14, 15	1	0.0057
H34	10, 15	9	12, 13, 14, 16	1	0.0057
H35	10, 15	9	12, 13, 15	1	0.0057
H36	10, 15	9	14, 15, 16	1	0.0057
H37	10, 15	9	14, 17	1	0.0057
H38	10, 15	9, 10	13, 16, 18	1	0.0057
H39	10, 16	8	14, 16	1	0.0057
H40	10, 16	8, 9	14, 15, 17	1	0.0057
H41	10, 16	8, 9	14, 16	1	0.0057
H42	10, 16	9	13	1	0.0057
H43	10, 16	9	13, 14, 15	2	0.0114
H44	10, 16	9	14, 15	1	0.0057
H45	10, 16	9, 10	13, 17, 18	2	0.0114
H46	10, 17	8, 9	14, 16, 17	1	0.0057
H47	10, 17	9	11, 12, 15, 16	1	0.0057
H48	10, 17	9	11, 12, 15, 17	1	0.0057
H49	10, 17	9	12, 13, 14, 15	2	0.0114
H50	10, 17	9	12, 13, 15, 17	1	0.0057
H51	10, 17	9	13, 14, 15, 17	2	0.0114
H52	10, 17	9	13, 14, 17, 18	1	0.0057
H53	10, 17	9	13, 17, 18	1	0.0057
H54	10, 18	8	15, 16	1	0.0057
H55	10, 18	9	12, 13, 16, 17	1	0.0057
H56	10, 18	9	13, 16, 17	1	0.0057
H57	10, 18	9	14, 16	1	0.0057
H58	10, 19	9	13, 14, 15, 18	1	0.0057
H59	10, 20	8	15, 16	1	0.0057
H60	10, 21	9	13, 15, 17, 19	1	0.0057
H61	11	7, 9	12, 13, 14	1	0.0057
H62	11	7, 9	13, 14	15	0.0852
H63	11	7, 9	13, 14, 15	2	0.0114
H64	11	7, 9	13, 14, 16	1	0.0057
H65	11	8	12, 14, 16, 17	1	0.0057
H66	11	9	13, 14	1	0.0057
H67	11	9	13, 15, 16	1	0.0057
H68	11, 12	7, 9	13, 14	3	0.0170
H69	11, 12	9	14, 15	1	0.0057
H70	11, 13	8, 9	13, 15	1	0.0057
H71	11, 14	9	12, 13, 14, 15	1	0.0057
H72	11, 14	9	13, 17, 18	1	0.0057

TABLE 2—*Continued.*

Haplotype	DYS385	DYS459	DYS464	*n*	Frequency
H73	11, 15	9	12, 15	1	0.0057
H74	11, 15	9	13, 15	2	0.0114
H75	11, 15	9	14, 16	1	0.0057
H76	11, 16	8, 9	12, 13, 14, 15	1	0.0057
H77	11, 16	9	12, 13, 14	1	0.0057
H78	11, 16	9	12, 13, 14, 15	2	0.0114
H79	11, 16	9	12, 14, 15	2	0.0114
H80	11, 16	9	13, 14	1	0.0057
H81	11, 16	9	13, 16, 18	1	0.0057
H82	11, 17	8, 10	12, 14, 15	1	0.0057
H83	11, 17	9	11, 13, 14, 15	1	0.0057
H84	11, 17	9	12, 13, 14	1	0.0057
H85	11, 17	9	12, 13, 14, 15	3	0.0170
H86	11, 17	9	12, 13, 15	2	0.0114
H87	11, 17	9	12, 14, 15	1	0.0057
H88	11, 17	9	13, 16, 17	2	0.0114
H89	11, 17	9	14, 15, 18, 19	1	0.0057
H90	11, 17	9	14, 16	2	0.0114
H91	11, 17	9, 10	13, 14, 15	1	0.0057
H92	11, 18	8, 9	12, 13, 14, 15	1	0.0057
H93	11, 18	9	12, 13, 14, 15	1	0.0057
H94	11, 18	9	12, 13, 15	1	0.0057
H95	11, 18	9	12, 15	1	0.0057
H96	11, 18	9	13, 15, 16, 17	1	0.0057
H97	11, 18	9	13, 16, 17	1	0.0057
H98	11, 18	9, 10	12, 14, 15, 16	1	0.0057
H99	11, 19	8, 9	13, 15	1	0.0057
H100	11, 19	9	13, 16	1	0.0057
H101	11, 19	9	14, 17	2	0.0114
H102	11, 20	9	12, 13, 15, 16	1	0.0057
H103	12, 13	7, 9	13, 14	1	0.0057
H104	12, 14	9	12, 13, 14, 17	1	0.0057
H105	12, 15	9	12, 15, 16, 17	1	0.0057
H106	12, 15	9	13, 14, 16	1	0.0057
H107	12, 15	9	14, 15	1	0.0057
H108	12, 15	9	14, 15, 16	1	0.0057
H109	12, 16	8	12, 14, 16	1	0.0057
H110	12, 16	9	12, 13, 14	1	0.0057
H111	12, 16	9	12, 13, 14, 15	2	0.0114
H112	12, 16	9	13, 14, 16	1	0.0057
H113	12, 16	9	14, 15, 16	1	0.0057
H114	12, 17	9	12, 13, 14, 15	1	0.0057
H115	12, 17	9	13, 14, 17	1	0.0057
H116	12, 17	9	14, 16, 18	1	0.0057
H117	12, 18	8, 9	13, 15	1	0.0057
H118	12, 19	9	15, 17	1	0.0057
H119	12, 19	10	15	1	0.0057
H120	12, 21	9	12, 13, 17	1	0.0057
H121	13, 16	9	13, 14, 17	1	0.0057
H122	13, 17	9	13, 14, 15, 16	1	0.0057
H123	13, 17	9	14, 17	1	0.0057
H124	13, 17	9, 10	12, 14, 15	1	0.0057
H125	13, 18	9	14, 15	1	0.0057
H126	13, 18	9, 10	12, 13, 15	1	0.0057
H127	13, 18	10	15	1	0.0057
H128	13, 20	10	15	1	0.0057
H129	13, 21	9, 10	11, 13, 15, 16	1	0.0057
H130	14, 18	10	15	1	0.0057
H131	14, 19	9	14, 17	1	0.0057
H132	17, 18	9	13, 14	1	0.0057
H133	18	9	13, 15	1	0.0057
Haplotype diversity = 0.9909					