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FOR THE RECORD

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Y Chromosomal Short Tandem Repeat Haplotypes in the Japanese Population

POPULATION: One hundred and twenty randomly collected Japanese males living in Osaka Prefecture.

KEYWORDS: forensic science, DNA typing, population genetics, Y-PLEX™5, Y-PLEX™6, PowerPlex Y, short tandem repeats, Y chromosome, haplotype, Japanese population, DYS19, DYS389I, DYS389II, DYS390, DYS391, DYS392, DYS393, DYS385, DYS438, DYS439

We have performed haplotyping of 10 Y-short tandem repeats (STRs) [giving 11 polymerase chain reaction (PCR) products]: DYS19, DYS389I, DYS389II, DYS390, DYS391, DYS392, DYS393, DYS385, DYS438, and DYS439 in 120 randomly collected Japanese males living in Osaka Prefecture (1,2). Blood samples were collected from unrelated healthy Japanese volunteer donors. DNA was isolated from the blood samples using the DNA Extractor WB kit (Wako Pure Chemical Industries, Osaka, Japan). PCR amplification was performed following the manufacturer's instructions (Y-PLEX™5, Y-PLEX™6 Systems; Reliagene Technologies Inc. [New Orleans, LA] and PowerPlex Y System; Promega Corporation, Madison, WI). The amplified products were electrophoresed on an ABI PRISM 310 Genetic Analyzer (Applied Biosystems, Foster City, CA). The gene and haplotype diversity values have been calculated as $1 - \sum_{i=1}^{n} p_i^2$, where p_i is the frequency of alleles or haplotypes (3). Allele frequencies and values of gene diversity for 10 Y-STR loci in the Japanese population samples are shown in Table 1. DYS385 was the most polymorphic of the 10 loci studied and the 13–17 genotype was the most frequent (0.1) at the locus (Table 1). DYS391 showed extremely low gene diversity in 10 STR loci (Table 1).

In 120 Japanese, we observed 116 different haplotypes, of which 114 haplotypes were unique (Table 2). Two haplotype were present in more than one person. The most frequent haplo-

TABLE 1—*Allele frequencies and gene diversity of 10 Y-STRs in the Japanese population (n = 120).*

Locus	Allele	Frequency	GD		Genotype	Frequency	GD
DYS19	12	0.017	0.722	DYS385	9–16	0.008	0.954
	13	0.067			10–17	0.025	
	14	0.050			10–18	0.058	
	15	0.400			10–19	0.067	
	16	0.283			10–20	0.092	
	17	0.175			10–21	0.025	
	18	0.008			11–11	0.008	
DYS389 I	11	0.050	0.680		11–16	0.008	
	12	0.208			11–17	0.008	
	13	0.317			11–18	0.025	
	14	0.417			11–19	0.017	
	15	0.008			12–12	0.008	
DYS389 II	27	0.092	0.785		12–13	0.008	
	28	0.158			12–14	0.017	
	29	0.233			12–15	0.025	
	30	0.317			12–16	0.017	
	31	0.158			12–17	0.025	
	32	0.042			12–18	0.033	
DYS390	22	0.192	0.755		12–19	0.033	
	23	0.275			12–20	0.017	
	24	0.175			13–14	0.025	
	25	0.317			13–15	0.017	
	26	0.042			13–16	0.050	
DYS391	10	0.858	0.249		13–17	0.100	
	11	0.117			13–18	0.033	
	12	0.025			13–19	0.008	
DYS392	11	0.433	0.627		13–21	0.008	
	12	0.058			13–22	0.017	
	13	0.417			14–16	0.058	
	14	0.092			14–17	0.042	
DYS393	11	0.008	0.574		14–18	0.042	
	12	0.241			14–19	0.017	
	13	0.592			14–20	0.008	
	14	0.125			15–15	0.017	
	15	0.033			15–16	0.008	
DYS438	9	0.025	0.571		15–17	0.008	
	10	0.600			16–16	0.008	
	11	0.117			16–17	0.008	
	12	0.008					
	13	0.233					
	14	0.017					
DYS439	11	0.200	0.546				
	12	0.625					
	13	0.150					
	14	0.025					

GD, gene diversity; STR, short tandem repeat.

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TABLE 2—*Y-STR haplotypes in the Japanese population (n = 120).*

	19	389I	389II	390	391	392	393	438	439	385	*n*
1	12	12	27	24	10	11	13	11	12	12–14	1
2	12	13	30	24	10	13	12	10	12	12–19	1
3	13	12	28	23	10	11	14	10	13	15–15	1
4	13	13	28	24	10	11	14	10	14	12–15	1
5	13	13	29	24	10	11	14	10	13	12–14	1
6	13	13	29	24	10	11	14	10	13	13–15	1
7	13	13	29	24	10	11	14	10	13	13–16	1
8	13	13	29	25	10	11	15	10	13	13–14	1
9	13	13	31	23	10	11	13	10	13	13–15	1
10	13	14	30	24	11	11	14	10	13	13–14	1
11	14	11	27	23	10	14	12	11	12	12–19	1
12	14	11	27	23	10	14	12	11	12	14–19	1
13	14	12	28	24	10	14	12	11	12	14–19	1
14	14	12	28	25	10	13	12	11	12	14–16	1
15	14	12	29	25	10	13	12	11	12	14–16	1
16	14	14	29	22	10	13	13	13	12	10–19	1
17	15	11	27	23	11	12	13	10	13	12–16	1
18	15	12	27	22	10	14	12	10	12	11–11	1
19	15	12	27	24	10	14	12	11	12	13–19	1
20	15	12	28	22	10	13	13	13	12	10–19	1
21	15	12	28	23	10	12	13	10	12	12–12	1
22	15	12	28	23	10	12	13	10	12	12–18	1
23	15	12	28	24	10	13	12	10	12	14–18	1
24	15	12	28	24	10	14	12	11	12	13–18	1
25	15	12	28	25	10	13	12	10	13	12–20	1
26	15	12	29	24	10	14	14	10	12	12–13	1
27	15	13	28	22	10	13	13	13	12	11–18	1
28	15	13	28	23	10	13	13	13	12	10–18	1
29	15	13	29	23	10	11	12	10	12	11–18	1
30	15	13	29	25	10	11	13	10	12	14–17	1
31	15	13	29	25	10	11	13	10	12	16–17	1
32	15	13	30	23	10	11	13	11	13	12–17	1
33	15	13	30	23	10	12	12	10	12	12–16	1
34	15	13	30	23	10	12	12	11	12	13–17	1
35	15	13	30	24	10	11	13	10	11	13–16	1
36	15	13	30	24	10	13	11	10	12	13–22	1
37	15	13	30	25	10	11	13	10	12	13–16	1
38	15	13	30	25	10	11	13	10	12	15–15	1
39	15	13	30	26	10	11	13	10	12	14–17	1
40	15	13	31	23	10	11	13	11	11	12–19	1
41	15	14	29	22	10	13	13	13	12	10–20	1
42	15	14	29	22	10	13	13	13	12	10–21	1
43	15	14	29	22	10	13	14	11	12	10–21	1
44	15	14	29	23	10	11	14	10	12	11–16	1
45	15	14	30	22	10	13	13	13	11	10–20	1
46	15	14	30	22	10	13	13	13	12	10–18	1
47	15	14	30	22	10	13	13	13	12	10–19	1
48	15	14	30	22	10	13	13	13	12	10–20	4
49	15	14	30	22	10	13	13	14	11	10–20	1
50	15	14	30	22	10	13	13	14	12	10–17	1
51	15	14	30	22	10	14	13	13	12	10–18	1
52	15	14	30	22	11	13	13	13	12	10–20	1
53	15	14	30	23	10	11	14	10	11	10–20	1
54	15	14	30	23	10	11	15	10	11	11–19	1
55	15	14	30	23	10	13	13	13	12	10–19	1
56	15	14	30	23	12	11	14	9	13	14–20	1
57	15	14	30	24	10	13	13	13	12	10–21	1
58	15	14	31	25	10	11	13	10	12	13–14	1
59	15	14	31	25	10	11	14	10	13	13–17	1
60	15	14	31	25	10	13	13	13	13	10–18	1
61	15	14	31	26	10	11	12	11	14	12–17	1
62	16	11	27	23	11	12	12	10	12	12–15	1
63	16	11	32	23	10	11	13	10	13	14–16	1
64	16	12	27	23	10	13	12	10	11	14–17	1
65	16	12	27	24	10	11	15	10	12	10–19	1
66	16	12	27	25	12	13	13	10	12	14–18	1
67	16	12	28	22	10	13	12	10	11	11–19	1
68	16	12	28	25	10	13	12	10	11	14–17	1
69	16	12	28	26	10	13	12	10	11	14–17	1
70	16	12	29	23	10	12	12	10	11	12–19	1
71	16	12	30	23	10	14	12	10	12	12–15	1
72	16	13	28	23	10	13	13	13	12	10–18	1

TABLE 2— *Continued.*

	19	389I	389II	390	391	392	393	438	439	385	*n*
73	16	13	28	23	10	13	13	13	12	10–19	1
74	16	13	29	22	10	13	13	10	12	10–20	1
75	16	13	29	22	10	13	13	13	12	10–20	1
76	16	13	29	23	10	11	13	10	13	15–17	1
77	16	13	29	23	11	11	15	10	12	11–17	1
78	16	13	29	25	10	13	12	12	11	14–16	1
79	16	13	30	23	10	11	14	9	12	14–16	1
80	16	13	30	23	10	11	14	9	12	14–18	1
81	16	13	30	26	10	11	13	10	11	13–17	1
82	16	13	31	25	10	13	13	10	11	16–16	1
83	16	13	32	25	10	11	13	10	12	13–17	1
84	16	14	29	22	10	13	14	13	12	10–19	1
85	16	14	29	23	10	13	13	13	12	10–17	1
86	16	14	29	23	10	14	13	13	12	10–18	1
87	16	14	29	23	10	14	13	13	14	10–19	1
88	16	14	29	23	11	13	13	13	12	10–18	1
89	16	14	29	26	11	13	12	10	11	12–18	1
90	16	14	30	22	12	13	13	13	12	11–18	1
91	16	14	30	24	10	11	13	10	12	12–17	1
92	16	14	30	24	11	13	12	10	12	13–18	1
93	16	14	31	25	10	11	13	10	12	13–18	1
94	16	14	32	25	10	11	13	10	12	9–16	1
95	16	15	32	25	10	11	13	10	12	14–16	1
96	17	11	30	25	11	13	13	10	11	13–21	1
97	17	12	28	24	10	13	12	10	12	12–18	1
98	17	12	29	25	10	13	12	10	12	12–20	1
99	17	13	28	25	10	13	13	13	12	10–17	1
100	17	13	29	24	10	11	13	10	11	14–16	1
101	17	13	30	25	11	11	13	10	13	13–17	1
102	17	13	30	25	11	13	13	10	11	13–22	1
103	17	13	32	25	11	11	13	10	12	13–16	1
104	17	14	30	25	10	11	13	10	12	13–16	1
105	17	14	30	25	11	13	12	10	11	12–18	1
106	17	14	31	24	10	11	13	10	12	13–17	1
107	17	14	31	25	10	11	13	10	11	13–17	2
108	17	14	31	25	10	11	13	10	11	13–18	1
109	17	14	31	25	10	11	13	10	12	13–16	1
110	17	14	31	25	10	11	13	10	12	13–17	1
111	17	14	31	25	10	11	13	10	12	14–18	1
112	17	14	31	25	10	11	13	10	12	15–16	1
113	17	14	31	25	10	11	13	10	13	13–17	1
114	17	14	31	25	10	11	13	11	11	13–17	1
115	17	14	31	25	11	11	13	10	13	13–17	1
116	18	12	27	25	10	13	12	10	11	14–18	1

HT, haplotype number; STR, short tandem repeat.
n, number of individuals observed for each given haplotype.

type was the haplotype number 48 (#48) that was found four times in this study.

The complete data are available to any interested researcher upon request from the corresponding author Akiyoshi Tamura at leg003@art.osaka-med.ac.jp

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