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FOR THE RECORD

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Characterization of 17 Y-STR Loci in a Population from El Salvador (San Salvador, Central America) and Their Potential for DNA Profiling

POPULATION: A total of 120 unrelated Mestizos who represent the largest community of the country El Salvador, (Central America)

KEYWORDS: forensic science, DNA typing, short tandem repeats, Y chromosome, population genetics, Mestizos, San Salvador, Central America

Blood samples were taken from 120 healthy unrelated male individuals born and living in El Salvador (San Salvador, Central America). All the individuals were Mestizos who are descendents of Spanish and Amerindian people and represent the largest population of the country. DNA was isolated from the samples using standard phenol-chloroform extraction method and quantification of DNA was carried out by fluorescence detection with DyNAQuant 200 (APB).

Each locus was amplified by PCR individually, except for: GATA A7.2, GATA C4, DYS437, DYS438 (4-loci-multiplex system), and GATA A71, GATA A10, DYS 439 and GATA H4 (4 loci-multiplex system) and DYS389I/II and DYS385 I and II (two loci each with the same set of primers). PCR amplification and typing conditions were the same as previously described (1–3). Detection of the amplified products was carried out using either a monochromatic (Automatic Laser Fluorescent DNA sequencer, Amersham Pharmacia Biotech) or a polychromatic platform (Applied Biosystems ABI310 genetic analyzer). The recommendations of the International Society for Forensic Genetics were followed for typing and interpretation (4). Allele nomenclature for Y-chromosome tetraplex systems was according to Gusmao et al. (5). Sequenced alleles were used as controls.

Allele and haplotype frequencies were estimated by gene counting. Gene and haplotype diversities were calculated as previously described (6–9).

The complete haplotype data are shown in Table 1. A total of 120 different Y-chromosome haplotypes were observed in the 120 males from El Salvador.

The combined haplotype diversity calculated for this set of Y polymorphisms was 0.9998 and the probability of match was 0.0083. Our results revealed the high power of discrimination obtained by the use of this set of 17-linked STR markers. The 17 Y-chromosome loci selected for the present study have a great potential for forensic applications in this population. The complete data set will be made available to any interested researcher upon request.

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TABLE 1—*Distribution of Y-chromosomal haplotypes at 17 microsatellites in a population sample from El Salvador (n=120).*

Haplotype	DYS 19	DYS 385a/b	DYS 389I	DYS 389II	DYS 390	DYS 392	DYS 393	DYS 388	GATA A7.1	GATA A7.2	GATA A10	GATA C4	GATA H4	DYS 437	DYS 438	DYS 439	N observed
1	12	11,16	13	30	23	13	13	12	10	12	14	22	28	14	11	11	1
2	12	13,16	13	28	24	15	12	14	10	13	15	22	27	14	11	12	1
3	12	14,16	13	29	24	14	13	12	10	12	14	22	27	15	11	12	1
4	12	14,17	14	31	24	15	13	12	9	12	13	23	27	14	11	11	1
5	12	15,19	12	29	24	13	13	12	9	12	13	22	27	14	10	13	1
6	13	9,9	14	30	23	14	12	12	10	11	16	21	26	16	10	11	1
7	13	10,12	13	29	24	13	14	12	11	11	15	23	27	14	11	12	1
8	13	10,13	14	32	24	13	14	12	11	12	15	23	28	15	12	12	1
9	13	11,14	13	29	24	13	14	12	11	12	14	23	28	15	12	14	1
10	13	11,14	13	29	25	11	13	12	10	12	15	23	27	14	12	12	1
11	13	11,15	13	29	24	11	14	12	10	11	14	21	27	14	10	11	1
12	13	11,16	14	31	24	14	13	12	10	12	15	22	27	14	10	12	1
13	13	12,13	14	30	24	11	13	12	11	13	15	21	28	14	10	10	1
14	13	12,14	13	29	24	13	13	12	12	11	15	23	27	15	12	12	1
15	13	12,15	13	28	24	13	13	12	11	13	15	23	28	16	13	12	1
16	13	12,17	12	29	23	14	13	12	9	10	14	22	27	13	10	12	1
17	13	13,14	14	30	24	11	13	12	9	13	14	21	27	14	10	11	1
18	13	13,15	14	31	23	14	13	13	10	13	17	23	28	14	11	11	1
19	13	13,17	14	31	25	14	13	12	11	12	16	22	29	14	11	12	1
20	13	13,18	12	30	23	11	12	16	9	11	15	21	25	14	10	12	1
21	13	14,16	13	29	24	13	13	12	11	11	15	22	28	14	11	12	1
22	13	14,16	13	29	24	15	13	11	11	13	14	22	28	14	10	11	1
23	13	14,16	13	29	24	15	12	11	11	13	14	22	28	14	11	12	1
24	13	14,16	13	29	24	15	14	12	11	11	14	22	28	14	11	11	1
25	13	14,16	14	30	24	12	14	13	10	12	13	22	27	14	11	12	1
26	13	14,17	13	28	24	14	14	12	10	14	14	23	28	16	11	11	1
27	13	14,17	13	30	24	13	13	12	11	12	14	23	27	14	11	12	1
28	13	14,17	13	30	24	15	13	12	11	12	15	23	28	14	11	11	1
29	13	14,17	13	31	22	15	14	12	11	12	15	23	28	14	12	11	1
30	13	14,17	14	30	24	15	13	12	11	12	16	22	29	15	11	12	1
31	13	14,18	12	28	23	14	13	12	11	12	15	23	28	14	11	12	1
32	13	14,18	12	29	24	13	13	12	10	12	14	22	28	14	12	11	1
33	13	14,18	13	30	24	13	13	12	10	13	16	22	28	13	10	13	1
34	13	15,15	13	30	23	11	13	12	10	13	14	22	28	15	10	12	1
35	13	15,15	14	30	24	16	13	12	9	11	15	22	27	14	11	10	1
36	13	15,16	13	28	24	11	13	12	9	13	14	23	28	14	10	13	1
37	13	15,17	13	31	23	15	13	12	10	11	14	22	28	13	11	13	1
38	13	15,17	14	31	24	14	13	12	9	12	14	22	28	14	12	12	1
39	13	15,18	13	30	24	15	14	12	10	13	14	22	30	14	11	13	1
40	13	16,17	13	29	24	15	13	12	10	13	16	22	28	14	11	14	1
41	13	16,17	13	30	23	15	13	12	11	12	15	22	28	14	11	11	1
42	14	9,9	13	30	23	11	14	12	10	12	13	21	25	16	10	10	1
43	14	9,9	14	31	23	15	12	12	10	12	15	22	26	16	10	11	1
44	14	9,13	13	29	24	13	13	12	11	12	15	22	28	16	13	12	1
45	14	10,12	13	29	24	13	13	13	10	15	14	23	26	15	12	11	1
46	14	10,13	12	29	24	13	13	12	11	12	15	23	28	15	12	10	1
47	14	10,13	13	28	23	12	13	12	10	11	13	22	27	15	12	11	1
48	14	10,13	13	28	24	15	13	12	11	12	15	24	26	15	12	11	1
49	14	10,13	13	29	24	13	13	12	11	11	14	23	29	15	12	12	1
50	14	10,13	13	29	24	14	13	12	11	13	15	22	28	15	11	12	1

TABLE 1—*Continued.*

Haplotype	DYS 19	DYS 385a/b	DYS 389I	DYS 389II	DYS 390	DYS 392	DYS 393	DYS 388	GATA A7.1	GATA A7.2	GATA A10	GATA C4	GATA H4	DYS 437	DYS 438	DYS 439	N observed
51	14	10,14	12	27	23	14	13	12	11	13	15	23	27	14	11	12	1
52	14	10,14	12	29	23	14	13	15	11	13	15	24	28	14	12	12	1
53	14	11,11	12	28	24	13	13	12	10	12	15	23	27	16	12	11	1
54	14	11,11	13	29	24	15	12	12	11	12	15	25	28	15	12	12	1
55	14	11,11	14	29	22	14	13	12	11	12	15	23	28	15	12	13	1
56	14	11,11	14	30	24	14	13	12	10	11	15	21	28	14	11	12	1
57	14	11,13	13	29	24	13	12	12	12	11	17	23	28	15	12	13	1
58	14	11,14	12	28	23	12	13	12	11	12	16	22	27	14	12	13	1
59	14	11,14	13	29	21	13	13	12	10	12	14	23	28	15	12	11	1
60	14	11,14	13	29	24	13	13	12	12	12	16	24	26	15	12	12	1
61	14	11,14	13	29	24	13	13	12	11	13	15	23	27	15	12	12	1
62	14	11,14	13	29	24	15	13	12	11	13	15	22	27	15	11	13	1
63	14	11,14	13	30	24	14	13	12	10	12	15	23	27	14	13	12	1
64	14	11,14	14	30	23	14	14	12	11	12	15	23	28	15	12	11	1
65	14	11,15	12	28	24	13	13	12	12	12	15	23	28	15	12	11	1
66	14	11,15	13	28	24	13	13	12	10	11	13	22	27	14	11	11	1
67	14	11,15	13	29	24	12	13	12	11	12	15	23	28	15	12	12	1
68	14	11,15	13	29	24	13	12	12	11	12	16	22	28	14	11	12	1
69	14	11,15	14	32	24	13	13	12	11	11	14	22	27	14	11	12	1
70	14	13,13	13	30	23	14	12	12	11	11	14	23	27	13	12	11	1
71	14	13,14	11	28	22	11	13	14	10	11	15	23	27	15	9	12	1
72	14	13,14	14	28	22	11	13	14	9	11	14	23	26	16	10	10	1
73	14	13,16	13	28	23	11	12	15	10	11	15	22	27	15	9	11	1
74	14	13,16	13	29	27	15	13	12	11	10	14	24	27	14	11	11	1
75	14	13,17	13	30	23	11	11	15	12	11	15	21	27	14	10	11	1
76	14	13,18	13	29	24	14	13	12	9	15	15	22	28	14	11	12	1
77	14	13,18	13	31	24	11	12	12	10	12	14	22	26	13	9	12	1
78	14	14,16	13	29	24	13	14	12	10	13	13	22	26	15	11	11	1
79	14	14,16	14	32	23	14	13	13	10	14	17	24	28	15	11	11	1
80	14	14,17	13	28	24	13	13	12	10	12	14	24	28	15	12	13	1
81	14	14,20	13	31	24	14	13	12	10	12	16	22	27	14	11	12	1
82	14	15,15	12	30	21	11	13	12	9	14	13	22	27	14	11	11	1
83	14	15,15	13	30	23	12	13	12	9	13	14	23	27	15	10	11	1
84	14	15,17	13	30	23	15	15	12	11	12	14	23	28	15	11	12	1
85	14	16,16	13	31	23	11	12	12	11	10	15	20	27	13	9	12	1
86	14	16,16	14	32	24	13	13	12	10	11	15	23	28	14	12	11	1
87	14	16,17	14	31	23	14	12	12	11	11	16	21	26	16	10	11	1
88	14	16,18	14	29	23	11	12	17	9	12	15	21	26	14	11	11	1
89	14	18,21	13	30	21	11	13	12	10	12	13	20	27	13	11	12	1
90	15	9,9	13	30	21	13	11	13	10	12	16	25	27	15	12	13	1
91	15	10,10	13	28	22	12	13	13	11	11	14	22	28	16	11	11	1
92	15	10,14	13	29	23	14	14	12	11	13	15	23	28	14	12	12	1
93	15	11,12	13	32	24	12	13	11	11	11	14	20	27	14	10	13	1
94	15	11,13	13	28	23	12	15	13	11	14	14	23	27	16	11	12	1
95	15	11,14	13	29	23	11	14	12	11	12	14	22	28	15	12	12	1
96	15	11,14	13	29	23	14	13	12	10	12	15	23	29	15	12	12	1
97	15	11,14	13	30	23	13	13	12	11	12	15	23	28	15	12	11	1
98	15	11,14	14	28	25	12	14	12	11	12	15	23	28	15	12	12	1
99	15	11,14	14	29	24	12	13	12	10	12	15	22	28	15	11	12	1
100	15	11,15	14	31	24	13	13	12	10	12	15	23	27	14	12	12	1

TABLE 1—*Continued.*

Haplotype	DYS 19	DYS 385a/b	DYS 389I	DYS 389II	DYS 390	DYS 392	DYS 393	DYS 388	GATA A7.1	GATA A7.2	GATA A10	GATA C4	GATA H4	DYS 437	DYS 438	DYS 439	N observed
101	15	12,12	12	29	22	11	14	12	11	11	14	22	28	16	11	10	1
102	15	12,12	12	29	23	11	13	13	10	11	15	23	27	14	10	11	1
103	15	12,16	14	31	24	14	14	12	11	12	15	22	28	14	11	12	1
104	15	13,14	12	28	24	13	13	12	11	12	15	24	28	15	12	11	1
105	15	13,14	13	29	22	12	13	14	10	14	15	24	27	17	11	11	1
106	15	13,14	13	31	24	11	13	12	11	12	13	21	28	16	10	12	1
107	15	13,15	13	31	21	11	15	12	10	10	13	20	27	15	9	11	1
108	15	13,16	12	30	23	12	13	15	10	12	15	23	27	15	9	10	1
109	15	13,17	15	31	25	12	14	12	10	12	14	20	27	15	10	12	1
110	15	14,14	12	27	22	12	14	13	10	11	14	21	28	16	10	11	1
111	15	14,14	14	30	24	13	13	12	10	11	14	23	27	14	9	13	1
112	15	15,15	12	28	22	10	14	12	10	11	14	20	27	15	9	12	1
113	15	15,15	12	30	21	10	14	14	11	11	14	21	27	16	10	13	1
114	15	15,15	13	31	21	11	14	12	11	12	15	23	26	14	11	12	1
115	15	15,16	12	29	22	13	13	12	11	10	14	20	27	15	10	11	1
116	15	16,17	14	32	23	14	13	12	10	11	14	21	27	14	9	12	1
117	16	12,12	13	28	22	11	13	13	10	11	13	21	25	15	10	12	1
118	16	16,16	13	31	21	11	14	12	10	13	13	21	28	14	11	12	1
119	17	12,17	13	31	24	11	12	12	10	13	15	21	26	14	10	12	1
120	17	13,16	13	29	23	12	12	12	9	13	14	22	27	14	8	11	1