

Announcement of Population Data

Usefulness of 12 Y-STRs for forensic genetics evaluation in two populations from Venezuela

Lisbeth Borjas ^{a,*}, Lennie Pineda Bernal ^a, Miguel A. Chiurillo ^c, Florangel Tovar ^b,
William Zabala ^a, Noelia Lander ^b, Jose L. Ramírez ^b

^a Laboratorio de Genética Molecular, Unidad de Genética Médica, Facultad de Medicina, Universidad del Zulia, P.O. Box 15047, Maracaibo, Venezuela

^b Laboratorio de Polimorfismos Genéticos. Centro de Biotecnología, Instituto de Estudios Avanzados, MCT, Caracas, Venezuela

^c Laboratorio de Genética Molecular “Dr. Yunis-Turbay”, Decanato de Medicina, Universidad Centro Occidental Lisandro Alvarado, Barquisimeto, Venezuela

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Abstract

The distribution of allele frequencies and haplotypes for 12 STRs loci, (DYS19, DYS389I/II, DYS390, DYS391, DYS392, DYS393, DYS385a/b, DYS437, DYS438 and DYS439) on the Y-chromosome from two Venezuelan populations were determined in 173 DNA samples of unrelated males living in Caracas (62) and Maracaibo (111). Some parameters of forensic importance were calculated. AMOVA and genetic distances between these populations were estimated. The results confirmed Y-STR genotypes as useful markers for forensic genetics analysis.

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Keywords: Forensic genetic; Y-STRs; Y-Database; Venezuela; Caracas; Maracaibo

Population: A total of 173 unrelated males living in two different Venezuelan populations: Caracas (62) and Maracaibo (111) in central and northwest area of the country, respectively.

DNA extraction: DNA was extracted either from peripheral blood samples by organic method (Maracaibo) or from FTA Cards from GIBCO-BRL (Caracas), following the manufacturer's recommendations.

PCR amplification: 1–5 ng samples of DNA were used to amplify 12 Y-STR loci as described by PowerPlex® Y System (Promega, USA) protocols, following the manufacturer instructions. The PCR were performed in a PTC-100 thermocycler device (MJ Research®).

Typing: The Y-STRs genotypes were determined using the ABI PRISM™ 310 Genetic Analyzer, and automated allele sizing was performed using the GeneScan analysis

software v.3.7 (Applied Biosystems). Alleles were described following the recommendations of ISFG on Y chromosome STR analysis [1].

Quality control: Quality control was carried out for the proficiency testing of the GEP-ISFG working group [2], and the Y-STR haplotyping quality assurance exercise 2001 (<http://www.yhrd.org>) [3].

Data analysis: Statistical calculations were performed with Arlequin version 2000 software [4]. Gene and haplotype diversity were estimated according to Nei [5]. For these loci haplotype diversity value corresponds to the power of discrimination (PD). The genetic relationship between Maracaibo and Caracas was evaluated using the pairwise Rst Genetic Distance calculated by the Arlequin software.

Access to data: Through e-mail from the corresponding author, or accessing the web page: www.yhrd.org.

Results: See Tables 1 and 2.

Except for DYS19 and DYS385a/b markers, allele frequencies in the two populations showed similar distributions. For the Y-STRs analyzed in both populations we

* Corresponding author. Tel.: +58 261 6110736; fax: +58 261 7868631.
E-mail address: lisbor@cantv.net (L. Borjas).

Table 1
Alleles frequencies and gene diversity (D) of Y-STRs loci among individuals from Maracaibo and Caracas, Venezuela

Alleles	Caracas	Maracaibo
<i>DYS19</i>		
12	0.016	–
13	0.113	0.099
14	0.468	0.685
15	0.258	0.198
16	0.064	0.009
17	0.081	0.009
D	0.691	0.482
<i>DYS389I</i>		
12	0.194	0.171
13	0.564	0.631
14	0.226	0.189
15	0.016	0.009
D	0.593	0.537
<i>DYS389II</i>		
27	–	0.009
28	0.113	0.154
29	0.355	0.387
30	0.387	0.351
31	0.129	0.081
32	0.016	0.018
D	0.695	0.697
<i>DYS390</i>		
21	0.145	0.027
22	0.048	0.081
23	0.306	0.288
24	0.419	0.559
25	0.082	0.036
26	–	0.009
D	0.700	0.596
<i>DYS391</i>		
9	0.097	0.027
10	0.468	0.423
11	0.419	0.505
12	0.016	0.036
13	–	0.009
D	0.596	0.564
<i>DYS392</i>		
10	0.032	0.009
11	0.403	0.324
12	0.016	0.045
13	0.468	0.568
14	0.081	0.036
15	–	0.018
D	0.611	0.569
<i>DYS393</i>		
10	–	0.009
12	0.145	0.198
13	0.725	0.694
14	0.065	0.090
15	0.065	0.009

Table 1 (continued)

Alleles	Caracas	Maracaibo
D	0.444	0.471
<i>DYS385</i>		
10,14	0.027	0.016
10,15	0.009	–
11,11	0.009	–
11,12	0.018	–
11,13	0.009	0.016
11,14	0.450	0.274
11,15	0.054	0.113
12,12	–	0.016
12,13	0.009	0.032
12,14	0.045	0.016
12,15	0.009	0.016
12,16	0.009	–
12,18	0.009	–
13,13	0.009	0.048
13,14	0.045	0.081
13,15	0.009	0.032
13,16	0.054	–
13,17	0.009	–
13,18	0.027	–
14,14	0.018	–
14,15	0.027	–
14,16	–	0.016
14,17	–	0.016
14,18	–	0.048
14,19	–	0.016
14,20	0.009	–
15,16	0.009	0.032
15,17	0.009	0.032
15,18	0.009	–
15,19	0.009	–
16,16	0.027	–
16,17	0.036	0.048
16,18	0.009	0.016
16,19	0.009	0.032
17,17	–	0.032
17,18	0.009	0.016
17,19	–	–
17,20	–	0.016
18,18	–	0.016
18,19	0.009	–
D	0.889	0.781
<i>DYS437</i>		
13	0.016	0.018
14	0.500	0.442
15	0.419	0.468
16	0.065	0.072
D	0.570	0.581
<i>DYS438</i>		
9	0.129	0.117
10	0.226	0.234
11	0.210	0.063
12	0.435	0.568
13	–	0.018
D	0.699	0.6046
<i>DYS439</i>		
10	0.113	0.045

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