



Y chromosome haplotypes for nine STRs in Tobas, Amerindians from Northern Argentina

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Abstract

The purpose of this study is to report the haplotype distribution for nine Y chromosome short tandem repeats (Y-STRs; DYS389II, DYS389I, DYS390, DYS19, DYS393, DYS391, DYS434, DYS437, and DYS439) observed in the Toba population. The Toba native community is a closed population geographically located in northern Argentina. These nine STRs allowed the definition of 22 different haplotypes. Differences were found when compared to data from the Buenos Aires population.

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1. Introduction

In the past few years, Y chromosome short tandem repeats (Y-STRs) profiling has gained a very important role in paternity testing, forensic casework, and evolutionary studies. The purpose of this study is to report the haplotype distribution for nine Y-STRs observed in the Toba population.

The Toba native community is a closed population geographically located in northern Argentina. Their characteristic feature is that as they live in an isolated area with almost no interaction with individuals outside their community, their cultural and social traditions remain intact.

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Table 1
Tetraplex PCR

Sample (ng)	Gold Star PCR Buffer	dNTPs (μM)	MgCl_2 (mM)	DYS439 Primer (μM)	DYS437 Primer (μM)	DYS391 Primer (μM)	DYS434 Primer (μM)	Taq Gold (IU)	PCR final volume (μl)
1–10	1 \times	200	1.5	0.4	0.08	0.1	0.1	2	19

Table 2
Tetraplex PCR

Sample (ng)	Gold Star PCR Buffer	dNTPs (μM)	MgCl_2 (mM)	DYS389 Primer (μM)	DYS19 Primer (μM)	DYS390 Primer (μM)	DYS393 Primer (μM)	Taq Gold (IU)	PCR final volume (μl)
1–10	1 \times	200	1.5	0.08	0.12	0.18	0.08	2	12.5

Table 3
Amplification protocols

Tetraplex cycling		Pentaplex cycling	
95 °C for 10 min		95 °C for 10 min	
35 cycles	94 °C 30 s 60 °C 30 s 70 °C 45 s	35 cycles	94 °C 30 s 58 °C 30 s 70 °C 45 s
Final ext. Hold 4 °C	60 °C 45 min	final ext. hold 4 °C	60 °C 20 min

Table 4
Y chromosome haplotypes observed in the Toba population

#	DYS389II	DYS389I	DYS390	DYS19	DYS393	DYS391	DYS434	DYS437	DYS439	N
1	30	13	24	13	13	10	9	14	12	6
2	30	13	24	13	13	10	9	14	13	5
3	30	13	24	13	13	10	9	14	14	4
4	30	13	24	14	13	11	9	14	13	4
5	32	13	24	13	13	10	10	15	12	3
6	30	13	23	13	13	10	9	14	11	2
7	29	13	23	13	13	10	9	14	11	1
8	29	13	24	14	13	11	9	15	11	1
9	29	13	24	14	13	11	9	15	12	1
10	30	13	23	14	12	10	9	15	12	1
11	30	14	23	14	13	11	9	15	14	1
12	31	13	23	13	13	10	7	15	13	1
13	31	13	24	13	13	10	9	14	12	1
14	31	13	24	13	13	10	9	14	13	1
15	31	13	24	13	13	10	9	14	14	1
16	31	13	24	13	13	10	9	15	13	1
17	31	14	22	13	13	10	9	14	12	1
18	31	14	22	14	12	10	9	15	12	1
19	31	14	24	13	13	10	9	14	12	1
20	31	14	24	13	13	10	9	14	13	1
21	32	13	24	13	13	10	9	14	13	1
22	34	14	24	13	13	10	9	14	13	1

2. Materials and methods

We studied 40 unrelated male individuals from the Toba population. DNA was extracted using an organic procedure [1] from blood samples that were frozen for almost 10 years. Y-STRs analyzed were amplified in two polymerase chain reactions (PCRs): one tetraplex and one pentaplex reaction [2,3] (Tables 1 and 2). Amplification protocols are described in Table 3. PCR products were electrophoresed in 4% polyacrylamide denaturing gels and detected by silver staining of gels. Alleles were assigned by directly comparing with known reference samples. Haplotype proportions for these nine Y-STRs were compared with those corresponding to the Buenos Aires population [4].

3. Results and discussion

These nine STRs allowed the definition of 22 different haplotypes (Table 4). Differences were found in the most and least frequent haplotypes when compared to data from the Buenos Aires population.

These data indicate that they may be useful for anthropological and forensic studies.

References

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