J Forensic Sci, July 2004, Vol. 49, No. 4
Paper ID JFS2003377
Published 13 May 2004
Available online at: www.astm.org

FOR THE RECORD

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Two X-Chromosome STR Loci DXS6803 and XS6793 Frequency Data in Chinese Population*

POPULATION: 90 unrelated females and 90 unrelated males volunteer donors, Southwest China

KEYWORDS: forensic science, X-chromosome, DXS6803, DXS6793, short tandem repeat (STR), DNA typing, population genetics

TABLE 1—*Allele frequency distributions of DXS6803 and DXS6793.*

DXS6803						DXS6793					
Allele	Female Number	Female (%)	Male Number	Male (%)	Total Freq (%)	Allele	Female Number	Female (%)	Male Number	Male (%)	Total Freq. (%)
6	7	3.9	2	2.2	3.1	9	106	58.9	57	63.3	61.1
7	27	15.0	11	12.2	13.6	10	19	10.6	13	14.4	12.5
7.3	43	23.9	14	15.6	19.8	11	16	8.9	5	5.6	7.3
8	83	46.1	53	58.9	52.5	12	30	16.7	10	11.1	13.9
10	18	10.0	8	8.9	9.5	13	9	5.0	5	5.6	5.3
11.3	2	1.1	2	2.2	1.7	...	...	...	...	...	...
Total	90	1	90	1	1	Total	90	1	90	1	1
PD^F: 0.864; PD^M: 0.612; MEC:0.776; PE: 0.737; PIC: 0.665.						PD^F: 0.807; PD^M: 0.566; MEC:0.568; PE: 0.704; PIC: 0.595.					

Blood samples were collected from 90 unrelated females and 90 unrelated males volunteer donors of the Chinese Han ethnic group in Chengdu of China with EDTA anticoagulant.

DNA was extracted using Chelex-100 method (1). Genotyping were carried out by PCR in a PE9600 cycler. The components of a 20 μL reaction mixture were as follows: template DNA 20 ng, primer 0.125 μmol/L each, dNTPs 200 μmol/L each, KCl 50 μmol/L, Tris-HCl (pH 8.3)10 mmol/L, $MgCl_2$ 1.25 mmol/L, Taq polymerase 1.25U.

PCR conditions: start at 94°C for 3 min, followed by 34 cycles consist of 35 s at 94°C, 30 s at 56°C, 55 s at 72°C followed by a 5 min extension at 72°C. The amplified products were electrophoresed in 6% polyacrylamide gel by using 100 bp ladder and allelic markers as size markers, followed by silver staining (2). The amplified products were examined by using an ABI PRISM™ 310 Genetic Analyzer.

TABLE 2—*Genotypes of DXS6803 and DXS6793 found in females.*

DXS6803		DXS6793	
Genotypes	Number	Genotypes	Number
6–6	1	9–9	35
6–7.3	3	9–10	12
6–8	2	9–11	8
7–7	5	9–12	14
7–7.3	5	9–13	2
7–8	8	10–10	1
7–10	3	10–11	2
7–11.3	1	10–12	2
7.3–7.3	5	10–13	1
7.3–8	19	11–11	2
7.3–10	6	11–12	1
8–8	23	11–13	1
8–10	7	12–12	5
8–11.3	1	12–13	3
10–10	1	13–13	1
HWE exact test: $P = 0.103 > 0.05$; Het: 0.897;		HWE exact test: $P = 0.084 > 0.05$; Het: 0.916.	

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* The research was supported by grants from the Chinese Natural Sciences Foundation (No.-30171033) and State Ministry of Education (No. 01143) as well as Trans-Century Training Programme Foundation for the Talents by the Ministry of Education Commission (No. 2001-29).

DXS6803 (3) locus is tetranucleotide and DXS6793 (4) locus is trinucleotide. DXS6803 exhibited 6 clearly distinguishable alleles ranging from 114 bp to 137 bp. DXS6793 exhibited 5 clearly distinguishable alleles ranging from 178 bp to 190 bp.

The polymorphism information content (PIC), the mean exclusion chance (MEC) (5), the expected probability of exclusion (PE), average power of discrimination in females (PD^F) and in males (PD^M) (4) is shown in Table 1. The genotype frequencies of both loci are shown in Table 2. Fifteen genotypes were found in DXS6803 and DXS6793 loci, respectively, and they were in good agreement with the HWE. Additionally, we investigated the loci in 50 true trios with female children, which suggested a codominant X-linked inheritance. No mutations and no mother-child exclusions were found. It is suggested that these ChrX markers are useful for forensic analyses, especially in solving complicated kinship testing and paternity testing of lacking mother.

The frequency data of DXS6803 and DXS6793 in Chinese population can be accessed at http://www.legalmed.org/dna/dxs6803 and dxs6793.htm.

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Additional information of primer:
DXS6803:
P1:5′- GAA ATG TGC TTT GAC AGG AA-3′;
P2:5′- CAA AAA GGG ACA TAT GCT ACT T-3′.
DXS6793:
P1:5′- ACA CAC GTG GTT TAG ACC GT-3′;
P2:5′- CCA GAG CTA CGG GAA TAT GA-3′.

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