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Announcement of population data

Jordanian population data on five STR forensic loci: D16S539, TPOX, CSF1PO, Penta D, and Penta E

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Abstract

The allele distributions at five STR loci, D16S539, TPOX, CSF1PO, Penta D, and Penta E have been determined. None of the five loci were found to deviate from Hardy-Weinberg expectations according to the results of the G (homogeneity) test.

Keywords: Forensic; Polymerase chain reaction; DNA typing; Population genetics; Jordan

1. Population

The samples for this study were drawn from 100 randomly selected Jordanian Caucasian individuals representing various geographical counties in Jordan, under their consent.

2. Extraction

Genomic DNA was extracted from whole blood samples using the chelex extraction procedure [1].

3. PCR and typing

The coamplification of the five genetic STR loci, D16S539, TPOX, CSF1PO, Penta D, and Penta E was carried out using reagents provided in the PowerPlex16 System (Promega, Madison, WI, USA) according to the protocol supplied in the PowerPlex16 System Technical Manual. The genotype data were determined by fluorescence-based automated detection on an ABI PRISM 310 Genetic Analyzer and DNA Sequencer (Applied Biosystems, CA, USA).

4. Results

See Table 1.

5. Analysis of data

Possible departure from the Hardy–Weinberg equilibrium at each locus was tested for by the chi-square (χ^2) and *G*-statistic homogeneity (G_{ST}) tests (Statistica for Windows software, 1995 version, StatSoft, OK, USA). Observed/expected heterozygosity (H-obs and H-exp) [2], polymorphic information content (PIC) [3], and power of discrimination (PD) [4] were calculated.

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Table 1
Allele frequency distributions and forensic parameters of D16S539, TPOX, CSF1PO, Penta D, and Penta E in Jordanians

Allele	STR genetic loci				
	D16S539	TPOX	CSF1PO	Penta D	Penta E
2.2				0.015	
3.2				0.005	
5			0.005	0.010	0.085
7		0.005		0.005	0.065
8	0.020	0.510	0.010	0.025	0.070
9	0.115	0.105	0.020	0.175	0.020
10	0.090	0.090	0.340	0.175	0.085
11	0.355	0.250	0.330	0.185	0.100
12	0.290	0.040	0.245	0.125	0.170
13	0.115		0.035	0.185	0.100
14	0.015		0.015	0.050	0.055
15				0.045	0.065
16					0.025
17					0.060
18					0.030
19					0.050
20					0.020
H-obs	0.820	0.450	0.670	0.870	0.730
H-exp	0.755	0.657	0.714	0.849	0.912
χ^2 (P)	0.677774	0.001563	0.000040	0.226130	0.000014
G_{ST} (P)	0.991563	0.802521	0.996763	1.000000	0.999998
P_D	0.8826	0.8284	0.8532	0.9510	0.9764
PIC	0.7179	0.6105	0.6602	0.8309	0.9053

(P): P value.

6. Other remarks

The observed allele frequencies in the Jordanian population sample for the five STR genetic loci and some forensic efficiency parameters are shown in Table 1. The combination of the five STRs proved to be extremely discriminating in the Jordanian population with a combined P_D of 0.99999658, suggesting that the five STR loci investigated in this study are highly polymorphic tool for human individualization and paternity disputes in the Jordanian population.

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