

Bruce Budowle,<sup>1</sup> Ph.D.; Brendan Shea,<sup>2</sup> M.S.; Stephen Niezgodna,<sup>2</sup> M.B.A.; and Ranajit Chakraborty,<sup>3</sup> Ph.D.

## CODIS STR Loci Data from 41 Sample Populations\*

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**ABSTRACT:** Allele distributions for 12 or 13 CODIS core tetrameric short tandem repeat (STR) loci CSF1PO, D3S1358, D5S818, D7S820, D8S1179, D13S317, D16S539, D18S51, D21S11, FGA, TH01, TPOX, and vWA were determined in 41 population data sets. The major population groups comprise African Americans, U.S. Caucasians, Hispanics, Far East Asians, and Native Americans. There was little evidence for departures from Hardy-Weinberg expectations (HWE) in any of the populations. The  $F_{ST}$  estimates over all thirteen STR loci are 0.0006 for African Americans, –0.0005 for Caucasians, 0.0021 for Hispanics, 0.0039 for Asians, and 0.0282 for Native Americans.

**KEYWORDS:** forensic science, African American, Caucasian, Hispanic, Asian, Native American, population databases, STR, Hardy-Weinberg Expectations, PCR,  $F_{ST}$

DNA typing of biological samples provides the ability to eliminate individuals who have been falsely associated with forensic evidence and to reduce the number of potential contributors to a few or only one individual. Polymorphic short tandem repeat (STR) loci are the most informative PCR-based genetic markers for attempting to individualize biological material (1–4). To exploit the full potential of STR loci, the FBI Laboratory sponsored a community-wide scientific effort to select and establish the core STR loci for the national DNA index, CODIS (i.e., Combined DNA Index System). The resultant thirteen CODIS STR loci are CSF1PO, D3S1358, D5S818, D7S820, D8S1179, D13S317, D16S539, D18S51, D21S11, FGA, TH01, TPOX, and vWA (5). One of the outcomes of the forensic community effort is the generation of 41 population data sets that provide a solid foundation for profile frequency estimates. This paper presents STR allele distribution data on 12 or 13 of the CODIS core STR loci in several sampled populations from each of the following major population groups: African Americans, U.S. Caucasians, Hispanics, Far East Asians, and Native Americans.

<sup>1</sup> FBI Laboratory Division, FBI Academy, Quantico, VA.

<sup>2</sup> FBI Laboratory Division, Scientific Analysis Section, J. Edgar Hoover Building, Pennsylvania Avenue NW, Washington, DC.

<sup>3</sup> Human Genetics Center, University of Texas School of Public Health, P.O. Box 20334, Houston, TX.

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### Materials and Methods

#### Samples

A total of 20 laboratories generated population data. The California Department of Justice, Orange County Sheriff's-Coroner Laboratory, and Oregon State Police worked collectively in the study and generated the population data on the California-derived databases and the Chinese, Japanese 1, and Korean databases. The Alabama Department of Forensic Sciences generated the Alabama-derived population data. The Florida Department of Law Enforcement, Metro-Dade Police Department/Miami Children's Research Institute, and Palm Beach County Sheriff's Office worked collectively and generated the Florida-derived population data. The National Institute of Standards and Technology, North Carolina State Bureau of Investigation, and Virginia Division of Forensic Science worked collectively and generated the Virginia-derived population data and the general Asian population data. The Armed Forces Institute of Pathology, New York City Office of the Chief Medical Examiner, and Suffolk County Crime Laboratory worked collectively and generated the New York-derived population data and the Japanese 2-derived population data. The Illinois State Police, Michigan State Police, and Detroit Police Department worked collectively and generated the Michigan and Illinois-derived population data. The Illinois State Police generated the Vietnamese-derived population data. The Minnesota Bureau of Criminal Apprehension generated the Minnesota population data. The Royal Canadian Mounted Police generated the Canadian, Northern Ontario, Salishan, and Saskatchewan population data. The Arizona Department of Public Safety generated the Arizona Hispanic, Apache, and Navajo population data. The FBI Laboratory generated the FBI-labeled population data [which originate from samples from Texas and have been published previously (4)]. The samples from the Bahamas (kindly provided by Chief Superintendent James W. Carey, Forensic Science Section, Royal Bahamas Police Force), Jamaica (kindly provided by Dr. Yvonne Cruickshank, Director of the Forensic Science Laboratory in Jamaica), and Trinidad (kindly provided by Ms. Yolanda Thompson, Director of the Forensic Science Laboratory in Trinidad and Tobago) were analyzed by the FBI Laboratory. The Mexican sample, consisting of cosmopolitan Mestizo individuals from the state of Nuevo Leon, Mexico, was kindly provided by Ricardo Cerda-Flores of IMSS, Nuevo Leon, and typed at the FBI Laboratory. Further details regarding the source and preparation of the samples can be obtained by contacting the contributing laboratories.

**STR Amplification and Typing:** The DNA samples were amplified using kits from either PE Biosystems (Foster City, CA) or the

TABLE 1—Observed allele frequency distributions for 11 African American sample populations.<sup>a</sup>

D3S1358											
Allele	FBI <sup>a</sup> (N = 210)	BAHAMA <sup>a</sup> (N = 157)	JAMAICA <sup>a</sup> (N = 194)	TRINIDAD <sup>a</sup> (N = 80)	CALIFORNIA (N = 200)	ALABAMA (N = 124)	FLORIDA (N = 94)	VIRGINIA (N = 199)	NEW YORK (N = 150)	ILLINOIS (N = 153)	MINNESOTA (N=150)
<12	0.0048	0.0000	0.0000	0.0000	0.0025	0.0000	0.0053	0.0025	0.0000	0.0033	0.0000
12	0.0024	0.0000	0.0052	0.0000	0.0050	0.0040	0.0160	0.0050	0.0100	0.0033	0.0000
13	0.0119	0.0000	0.0155	0.0000	0.0125	0.0040	0.0053	0.0025	0.0100	0.0098	0.0100
14	0.1214	0.0764	0.0670	0.0563	0.0850	0.0726	0.0957	0.1156	0.1000	0.1144	0.0900
15	0.2905	0.3185	0.3376	0.3125	0.2750	0.2782	0.2979	0.3090	0.3067	0.3137	0.2400
15.2	0.0000	0.0032	0.0026	0.0000	0.0000	0.0040	0.0000	0.0000	0.0000	0.0033	0.0000
16	0.3071	0.3376	0.3067	0.3188	0.3625	0.3347	0.3191	0.2864	0.2867	0.3007	0.2800
17	0.2000	0.1975	0.2113	0.2000	0.2050	0.2379	0.1862	0.2085	0.2233	0.1863	0.2667
17.1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18	0.0548	0.0637	0.0464	0.1125	0.0500	0.0565	0.0691	0.0628	0.0567	0.0556	0.1067
19	0.0048	0.0032	0.0077	0.0000	0.0025	0.0040	0.0053	0.0075	0.0067	0.0098	0.0067
>19	0.0024	0.0000	0.0000	0.0000	0.0000	0.0040	0.0000	0.0000	0.0000	0.0000	0.0000
Obs. Hom.	21.4%	25.5%	27.8%	16.3%	25.0%	29.0%	24.5%	24.6%	20.0%	22.2%	27.3%
Exp. Hom.	23.5%	26.2%	25.8%	25.0%	25.7%	25.2%	23.5%	23.7%	23.7%	23.7%	22.4%
Hom. Test	0.482	0.838	0.513	0.070	0.818	0.320	0.833	0.747	0.286	0.659	0.149
Exact Test	0.797	0.758	0.270	0.222	0.637	0.448	0.219	0.797	0.818	0.813	0.158
vWA											
Allele	FBI (N = 180)	BAHAMA (N = 162)	JAMAICA (N = 244)	TRINIDAD (N = 85)	CALIFORNIA (N = 200)	ALABAMA (N = 124)	FLORIDA (N = 100)	VIRGINIA (N = 199)	NEW YORK (N = 150)	ILLINOIS (N = 155)	MINNESOTA (N=150)
11	0.0028	0.0093	0.0041	0.0059	0.0000	0.0121	0.0000	0.0050	0.0067	0.0000	0.0100
12	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0033
13	0.0056	0.0278	0.0082	0.0059	0.0125	0.0081	0.0150	0.0226	0.0267	0.0129	0.0300
14	0.0667	0.0617	0.0738	0.0882	0.0625	0.0927	0.0750	0.0729	0.0533	0.0516	0.0600
15	0.2361	0.1512	0.2275	0.1412	0.1925	0.2460	0.2300	0.2312	0.1733	0.2032	0.2233
16	0.2694	0.2623	0.2910	0.2941	0.2525	0.2056	0.2700	0.2764	0.2900	0.2677	0.2633
17	0.1833	0.2068	0.1824	0.2647	0.2450	0.2218	0.1900	0.1683	0.1967	0.2323	0.1767
18	0.1361	0.1821	0.1311	0.1353	0.1325	0.1250	0.1250	0.1382	0.1267	0.1452	0.1433
19	0.0722	0.0710	0.0533	0.0471	0.0725	0.0685	0.0600	0.0553	0.0967	0.0516	0.0733
20	0.0278	0.0278	0.0225	0.0176	0.0150	0.0121	0.0300	0.0276	0.0233	0.0323	0.0133
21	0.0000	0.0000	0.0061	0.0000	0.0100	0.0081	0.0050	0.0025	0.0067	0.0032	0.0033
>21	0.0000	0.0000	0.0000	0.0000	0.0050	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Obs. Hom.	11.7%	17.3%	20.9%	20.0%	20.5%	18.5%	15.0%	18.6%	22.7%	19.4%	26.0%
Exp. Hom.	18.9%	17.6%	19.4%	20.0%	18.6%	17.8%	18.4%	18.5%	18.0%	19.2%	17.8%
Hom. Test	0.014	0.928	0.557	0.991	0.490	0.828	0.383	0.970	0.134	0.959	0.009
Exact Test	0.328	0.790	0.655	0.229	0.774	0.325	0.204	0.482	0.217	0.592	0.119
FGA											
Allele	FBI (N = 180)	BAHAMA (N = 157)	JAMAICA (N = 194)	TRINIDAD (N = 80)	CALIFORNIA (N = 200)	ALABAMA (N = 124)	FLORIDA (N = 94)	VIRGINIA (N = 199)	NEW YORK (N = 150)	ILLINOIS (N = 153)	MINNESOTA (N=150)
<18	0.0028	0.0127	0.0077	0.0000	0.0025	0.0000	0.0106	0.0000	0.0067	0.0065	0.0067
18	0.0083	0.0000	0.0000	0.0125	0.0050	0.0040	0.0000	0.0201	0.0133	0.0065	0.0133
18.2	0.0083	0.0127	0.0206	0.0000	0.0150	0.0121	0.0319	0.0176	0.0133	0.0065	0.0067
19	0.0528	0.0573	0.0670	0.0563	0.0675	0.0847	0.0638	0.0578	0.0867	0.0719	0.0700
19.2	0.0028	0.0000	0.0077	0.0000	0.0075	0.0121	0.0053	0.0050	0.0067	0.0000	0.0033
19.3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	0.0722	0.0732	0.0464	0.0938	0.0450	0.0685	0.0745	0.0729	0.0567	0.0686	0.0333
20.2	0.0000	0.0000	0.0000	0.0000	0.0025	0.0000	0.0053	0.0025	0.0033	0.0000	0.0000
21	0.1250	0.1115	0.0747	0.1000	0.0950	0.1371	0.1277	0.1156	0.1400	0.0980	0.1767
21.2	0.0000	0.0032	0.0000	0.0000	0.0000	0.0000	0.0000	0.0025	0.0000	0.0033	0.0000
22	0.2250	0.1433	0.1881	0.1688	0.1750	0.1331	0.1649	0.1734	0.1733	0.2190	0.1833
22.2	0.0056	0.0000	0.0000	0.0000	0.0025	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
22.3	0.0000	0.0032	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
23	0.1250	0.1815	0.1959	0.1625	0.1975	0.1895	0.1436	0.1859	0.1600	0.1634	0.1333

TABLE 1—Continued.

FGA											
Allele	FBI (N = 180)	BAHAMA (N = 157)	JAMAICA (N = 194)	TRINIDAD (N = 80)	CALIFORNIA (N = 200)	ALABAMA (N = 124)	FLORIDA (N = 94)	VIRGINIA (N = 199)	NEW YORK (N = 150)	ILLINOIS (N = 153)	MINNESOTA (N=150)
23.2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0033
23.3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
24	0.1861	0.2006	0.1443	0.2063	0.1625	0.1613	0.1596	0.1457	0.1767	0.1536	0.1833
24.2	0.0000	0.0000	0.0026	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
24.3	0.0000	0.0000	0.0026	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0033
25	0.1000	0.0955	0.1160	0.1063	0.1125	0.0927	0.1011	0.0930	0.0867	0.1144	0.0967
25.1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
25.2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
25.3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0033	0.0000	0.0000
26	0.0361	0.0318	0.0412	0.0438	0.0425	0.0524	0.0319	0.0302	0.0367	0.0327	0.0467
26.2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
27	0.0222	0.0510	0.0515	0.0188	0.0350	0.0363	0.0319	0.0452	0.0133	0.0229	0.0200
27.2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
28	0.0167	0.0096	0.0155	0.0125	0.0175	0.0121	0.0160	0.0101	0.0067	0.0131	0.0167
29	0.0056	0.0064	0.0077	0.0063	0.0000	0.0000	0.0213	0.0075	0.0100	0.0065	0.0033
30	0.0028	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0033	0.0000
>30	0.0028	0.0064	0.0103	0.0125	0.0150	0.0040	0.0106	0.0151	0.0067	0.0098	0.0000
Obs. Hom.	12.8%	10.2%	9.3%	17.5%	14.5%	12.1%	12.8%	9.0%	12.0%	8.5%	11.3%
Exp. Hom.	13.4%	12.5%	12.3%	12.8%	12.6%	12.0%	10.9%	11.8%	12.4%	13.0%	13.2%
Hom. Test	0.794	0.378	0.196	0.207	0.417	0.971	0.554	0.223	0.884	0.098	0.503
Exact Test	0.995	0.930	0.290	0.835	0.011	0.446	0.896	0.881	0.981	0.808	0.058
D8S1179											
Allele	FBI (N = 180)	BAHAMA (N = 157)	JAMAICA (N = 194)	TRINIDAD (N = 80)	CALIFORNIA (N = 200)	ALABAMA (N = 124)	FLORIDA (N = 94)	VIRGINIA (N = 197)	NEW YORK (N = 150)	ILLINOIS (N = 155)	MINNESOTA (N=150)
<9	0.0028	0.0000	0.0000	0.0063	0.0050	0.0000	0.0053	0.0025	0.0067	0.0000	0.0067
9	0.0056	0.0032	0.0077	0.0000	0.0025	0.0000	0.0000	0.0025	0.0000	0.0000	0.0167
10	0.0250	0.0223	0.0129	0.0500	0.0075	0.0282	0.0266	0.0203	0.0300	0.0355	0.0300
11	0.0361	0.0510	0.0309	0.0750	0.0625	0.0484	0.0691	0.0558	0.0333	0.0484	0.0533
12	0.1083	0.1306	0.1134	0.1563	0.1075	0.1089	0.1223	0.1091	0.1167	0.1097	0.0867
13	0.2222	0.1879	0.2062	0.2313	0.2250	0.1855	0.1809	0.2157	0.1433	0.2194	0.1567
14	0.3333	0.3376	0.3222	0.2500	0.3100	0.3387	0.3670	0.3376	0.3667	0.3226	0.3467
15	0.2139	0.1847	0.2191	0.1750	0.1975	0.2177	0.1755	0.1701	0.2333	0.1806	0.2300
16	0.0444	0.0605	0.0799	0.0563	0.0575	0.0726	0.0479	0.0711	0.0567	0.0742	0.0633
17	0.0083	0.0223	0.0052	0.0000	0.0250	0.0000	0.0053	0.0152	0.0133	0.0097	0.0033
>17	0.0000	0.0000	0.0026	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0067
Obs. Hom.	23.9%	24.8%	17.0%	20.0%	22.0%	25.0%	27.7%	26.4%	25.3%	20.6%	26.0%
Exp. Hom.	22.0%	20.5%	21.3%	17.7%	20.3%	21.4%	21.7%	20.8%	22.6%	20.3%	21.1%
Hom. Test	0.537	0.180	0.147	0.593	0.555	0.323	0.160	0.054	0.422	0.926	0.138
Exact Test	0.696	0.168	0.284	0.896	0.698	0.077	0.132	0.080	0.872	0.868	0.350
D21S11											
Allele	FBI (N = 179)	BAHAMA (N = 157)	JAMAICA (N = 194)	TRINIDAD (N = 80)	CALIFORNIA (N = 200)	ALABAMA (N = 124)	FLORIDA (N = 94)	VIRGINIA (N = 197)	NEW YORK (N = 150)	ILLINOIS (N = 155)	MINNESOTA (N=150)
<24.2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
24.2	0.0028	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0032	0.0000
24.3	0.0000	0.0064	0.0026	0.0000	0.0000	0.0000	0.0000	0.0000	0.0033	0.0000	0.0000
25	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
25.2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
26	0.0028	0.0000	0.0000	0.0000	0.0025	0.0000	0.0000	0.0000	0.0000	0.0032	0.0000
26.2	0.0000	0.0000	0.0000	0.0000	0.0025	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
27	0.0615	0.0701	0.0644	0.0625	0.0375	0.0645	0.0532	0.0381	0.0567	0.0806	0.0667
28	0.2151	0.2197	0.2732	0.2250	0.2850	0.2621	0.1809	0.2310	0.2700	0.2161	0.2567
28.2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0053	0.0000	0.0000	0.0000	0.0000
29	0.1899	0.1752	0.1830	0.2000	0.2000	0.1976	0.1809	0.1980	0.1767	0.1581	0.1767
29.2	0.0028	0.0000	0.0000	0.0063	0.0025	0.0000	0.0000	0.0000	0.0033	0.0000	0.0033
29.3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0033	0.0000	0.0000
30	0.1788	0.1783	0.1649	0.1750	0.1500	0.1895	0.2287	0.2157	0.1667	0.1710	0.1767
30.2	0.0084	0.0096	0.0180	0.0125	0.0225	0.0282	0.0106	0.0254	0.0233	0.0226	0.0133
30.3	0.0000	0.0032	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
31	0.0922	0.0955	0.0644	0.0500	0.0700	0.0484	0.0691	0.0635	0.0867	0.1065	0.0933
31.1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0033	0.0000	0.0000

continues

TABLE 1—Continued.

D21S11											
Allele	FBI (N = 179)	BAHAMA (N = 157)	JAMAICA (N = 194)	TRINIDAD (N = 80)	CALIFORNIA (N = 200)	ALABAMA (N = 124)	FLORIDA (N = 94)	VIRGINIA (N = 197)	NEW YORK (N = 150)	ILLINOIS (N = 155)	MINNESOTA (N=150)
31.2	0.0754	0.0510	0.0490	0.0813	0.0375	0.0444	0.0638	0.0431	0.0467	0.0613	0.0500
32	0.0084	0.0191	0.0155	0.0313	0.0100	0.0242	0.0266	0.0102	0.0100	0.0129	0.0233
32.1	0.0000	0.0000	0.0026	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
32.2	0.0698	0.0987	0.0619	0.0688	0.0800	0.0484	0.0691	0.1066	0.0800	0.0806	0.0733
32.3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
33	0.0084	0.0032	0.0052	0.0063	0.0025	0.0040	0.0160	0.0051	0.0067	0.0097	0.0000
33.1	0.0000	0.0000	0.0000	0.0000	0.0050	0.0000	0.0000	0.0000	0.0000	0.0000	0.0033
33.2	0.0335	0.0382	0.0309	0.0500	0.0350	0.0403	0.0213	0.0228	0.0267	0.0355	0.0167
33.3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
34	0.0084	0.0064	0.0077	0.0188	0.0100	0.0161	0.0160	0.0076	0.0100	0.0032	0.0033
34.1	0.0000	0.0000	0.0000	0.0000	0.0025	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
34.2	0.0028	0.0032	0.0026	0.0000	0.0025	0.0040	0.0000	0.0000	0.0033	0.0032	0.0067
35	0.0279	0.0223	0.0412	0.0125	0.0350	0.0161	0.0479	0.0305	0.0133	0.0226	0.0367
35.2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
36	0.0056	0.0000	0.0103	0.0000	0.0075	0.0081	0.0053	0.0025	0.0100	0.0097	0.0000
>36	0.0056	0.0000	0.0026	0.0000	0.0000	0.0040	0.0053	0.0000	0.0000	0.0000	0.0000
Obs. Hom.	10.6%	18.5%	14.4%	13.8%	14.5%	12.9%	14.9%	14.7%	16.0%	12.9%	16.7%
Exp. Hom.	13.7%	13.7%	15.1%	13.8%	15.9%	15.5%	13.4%	15.8%	15.0%	12.9%	14.9%
Hom. Test	0.230	0.082	0.792	0.993	0.588	0.429	0.665	0.680	0.737	0.996	0.541
Exact Test	0.495	0.010	0.917	0.912	0.926	0.425	0.146	0.811	0.537	0.140	0.058
D18S51											
Allele	FBI (N = 180)	BAHAMA (N = 157)	JAMAICA (N = 194)	TRINIDAD (N = 78)	CALIFORNIA (N = 200)	ALABAMA (N = 124)	FLORIDA (N = 94)	VIRGINIA (N = 197)	NEW YORK (N = 150)	ILLINOIS (N = 155)	MINNESOTA (N=150)
<11	0.0056	0.0096	0.0026	0.0000	0.0050	0.0040	0.0053	0.0051	0.0000	0.0000	0.0133
11	0.0056	0.0096	0.0052	0.0256	0.0075	0.0040	0.0160	0.0051	0.0033	0.0065	0.0067
12	0.0583	0.0478	0.0438	0.0833	0.0625	0.0605	0.0532	0.0838	0.0733	0.0677	0.0533
13	0.0556	0.0510	0.0258	0.1026	0.0475	0.0444	0.0532	0.0711	0.0600	0.0613	0.0533
13.2	0.0056	0.0032	0.0052	0.0064	0.0050	0.0040	0.0000	0.0000	0.0100	0.0032	0.0167
14	0.0639	0.0446	0.0412	0.1090	0.0625	0.1008	0.0691	0.0660	0.0667	0.0613	0.0833
14.2	0.0000	0.0000	0.0026	0.0000	0.0100	0.0081	0.0000	0.0000	0.0067	0.0065	0.0033
15	0.1667	0.1561	0.1443	0.1538	0.1875	0.1734	0.1543	0.1980	0.2033	0.1548	0.1667
15.2	0.0000	0.0032	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0033	0.0000	0.0033
16	0.1889	0.1688	0.1881	0.2115	0.1725	0.1452	0.2021	0.1650	0.1633	0.1774	0.1867
16.2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0033
17	0.1639	0.1847	0.1881	0.0513	0.1500	0.1935	0.1277	0.1497	0.1533	0.1613	0.1667
18	0.1306	0.1274	0.1160	0.0577	0.0950	0.1048	0.1489	0.1142	0.1367	0.1355	0.1000
19	0.0778	0.0955	0.0954	0.0897	0.0975	0.0605	0.0904	0.0660	0.0533	0.1000	0.0933
20	0.0556	0.0478	0.0799	0.0705	0.0425	0.0484	0.0585	0.0533	0.0367	0.0355	0.0233
20.2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
21	0.0111	0.0223	0.0361	0.0385	0.0350	0.0242	0.0053	0.0102	0.0133	0.0226	0.0200
21.2	0.0000	0.0032	0.0026	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
22	0.0056	0.0255	0.0155	0.0000	0.0175	0.0202	0.0160	0.0127	0.0133	0.0065	0.0067
>22	0.0056	0.0000	0.0077	0.0000	0.0025	0.0040	0.0000	0.0000	0.0033	0.0000	0.0000
Obs. Hom.	13.3%	11.5%	10.3%	14.1%	11.0%	12.1%	9.6%	12.7%	10.7%	11.6%	10.7%
Exp. Hom.	12.5%	12.0%	12.4%	11.3%	11.7%	11.9%	12.1%	12.4%	12.5%	12.1%	12.0%
Hom. Test	0.732	0.836	0.372	0.439	0.747	0.944	0.452	0.887	0.488	0.853	0.609
Exact Test	0.920	0.263	0.573	0.523	0.338	0.401	0.360	0.957	0.787	0.659	0.654
D5S818											
Allele	FBI (N = 180)	BAHAMA (N = 162)	JAMAICA (N = 244)	TRINIDAD (N = 85)	CALIFORNIA (N = 200)	ALABAMA (N = 124)	FLORIDA (N = 100)	VIRGINIA (N = 199)	NEW YORK (N = 150)	ILLINOIS (N = 155)	MINNESOTA (N=150)
<7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0028	0.0000	0.0000	0.0118	0.0050	0.0000	0.0050	0.0000	0.0067	0.0000	0.0067
8	0.0500	0.0710	0.0533	0.0235	0.0525	0.0565	0.0550	0.0427	0.0700	0.0419	0.0567
9	0.0139	0.0093	0.0102	0.0294	0.0175	0.0161	0.0200	0.0176	0.0200	0.0194	0.0300
9.2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	0.0639	0.0586	0.0553	0.1529	0.0600	0.0887	0.0700	0.0628	0.0500	0.0806	0.0700
11	0.2611	0.2438	0.2049	0.2941	0.2825	0.2258	0.2300	0.2286	0.2533	0.2387	0.2600
12	0.3556	0.3704	0.3996	0.3235	0.3575	0.3508	0.3200	0.3894	0.3467	0.3484	0.3600
13	0.2444	0.2253	0.2561	0.1353	0.2075	0.2460	0.2450	0.2286	0.2400	0.2484	0.1900
14	0.0056	0.0154	0.0143	0.0235	0.0100	0.0121	0.0550	0.0276	0.0133	0.0161	0.0233

TABLE 1—Continued.

D5S818											
Allele	FBI (N = 180)	BAHAMA (N = 162)	JAMAICA (N = 244)	TRINIDAD (N = 85)	CALIFORNIA (N = 200)	ALABAMA (N = 124)	FLORIDA (N = 100)	VIRGINIA (N = 199)	NEW YORK (N = 150)	ILLINOIS (N = 155)	MINNESOTA (N=150)
15	0.0000	0.0062	0.0061	0.0000	0.0050	0.0040	0.0000	0.0000	0.0000	0.0032	0.0033
>15	0.0028	0.0000	0.0000	0.0059	0.0025	0.0000	0.0000	0.0025	0.0000	0.0032	0.0000
Obs. Hom.	22.2%	23.5%	29.5%	24.7%	26.0%	24.2%	22.0%	22.6%	25.3%	27.7%	22.7%
Exp. Hom.	25.9%	25.4%	27.2%	23.0%	25.6%	24.3%	22.3%	26.1%	24.7%	24.7%	24.0%
Hom. Test	0.259	0.571	0.418	0.717	0.887	0.978	0.946	0.260	0.868	0.372	0.694
Exact Test	0.468	0.271	0.770	0.977	0.622	0.535	0.319	0.173	0.543	0.097	0.546
D13S317											
Allele	FBI (N = 179)	BAHAMA (N = 162)	JAMAICA (N = 244)	TRINIDAD (N = 84)	CALIFORNIA (N = 200)	ALABAMA (N = 124)	FLORIDA (N = 100)	VIRGINIA (N = 199)	NEW YORK (N = 150)	ILLINOIS (N = 155)	MINNESOTA (N=150)
<8	0.0000	0.0031	0.0020	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0032	0.0000
8	0.0363	0.0278	0.0205	0.0536	0.0450	0.0323	0.0150	0.0302	0.0167	0.0161	0.0467
8.1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	0.0279	0.0309	0.0246	0.0476	0.0325	0.0121	0.0300	0.0251	0.0400	0.0419	0.0333
10	0.0503	0.0247	0.0246	0.0536	0.0225	0.0081	0.0100	0.0126	0.0033	0.0129	0.0300
11	0.2374	0.3056	0.2766	0.2798	0.2700	0.3669	0.3100	0.3291	0.3400	0.3258	0.2700
12	0.4832	0.3951	0.4549	0.3214	0.4050	0.3790	0.3800	0.4045	0.4200	0.3613	0.4100
13	0.1257	0.1605	0.1434	0.1607	0.1525	0.1694	0.1800	0.1482	0.1433	0.1710	0.1567
13.3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
14	0.0363	0.0525	0.0533	0.0833	0.0725	0.0323	0.0750	0.0477	0.0367	0.0677	0.0533
15	0.0028	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0025	0.0000	0.0000	0.0000
>15	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Obs. Hom.	31.3%	34.6%	31.6%	28.6%	29.5%	34.7%	24.0%	31.7%	32.0%	29.0%	31.3%
Exp. Hom.	31.0%	27.8%	30.7%	21.8%	26.7%	30.6%	27.6%	29.6%	31.3%	27.0%	27.0%
Hom. Test	0.928	0.055	0.774	0.131	0.374	0.330	0.419	0.528	0.864	0.575	0.234
Exact Test	0.298	0.173	0.051	0.068	0.513	0.685	0.024	0.081	0.948	0.495	0.951
D7S820											
Allele	FBI (N = 210)	BAHAMA (N = 162)	JAMAICA (N = 244)	TRINIDAD (N = 84)	CALIFORNIA (N = 200)	ALABAMA (N = 124)	FLORIDA (N = 100)	VIRGINIA (N = 199)	NEW YORK (N = 150)	ILLINOIS (N = 153)	MINNESOTA (N=150)
6	0.0000	0.0000	0.0041	0.0000	0.0000	0.0000	0.0050	0.0000	0.0000	0.0000	0.0033
6.3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0071	0.0123	0.0061	0.0060	0.0050	0.0040	0.0050	0.0176	0.0167	0.0196	0.0133
8	0.1738	0.1512	0.1988	0.2083	0.2325	0.1774	0.1700	0.2010	0.2433	0.1993	0.1933
8.1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8.2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	0.1571	0.1296	0.1393	0.1131	0.1125	0.1331	0.1000	0.1055	0.1467	0.1078	0.1300
9.1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9.3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	0.3238	0.3364	0.3443	0.3333	0.3400	0.2984	0.3650	0.3291	0.2933	0.3562	0.3133
10.1	0.0000	0.0000	0.0020	0.0000	0.0000	0.0040	0.0000	0.0000	0.0000	0.0000	0.0000
10.3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
11	0.2238	0.2191	0.1844	0.2202	0.2175	0.2621	0.2150	0.2261	0.2033	0.1928	0.2067
11.3	0.0000	0.0031	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	0.0905	0.1235	0.1025	0.1012	0.0775	0.1089	0.1250	0.0980	0.0867	0.1013	0.1167
13	0.0190	0.0247	0.0123	0.0179	0.0100	0.0121	0.0050	0.0176	0.0100	0.0196	0.0167
14	0.0048	0.0000	0.0061	0.0000	0.0050	0.0000	0.0100	0.0050	0.0000	0.0033	0.0067
>14	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Obs. Hom.	19.5%	23.5%	24.2%	22.6%	26.5%	17.7%	23.0%	16.6%	21.3%	22.2%	18.7%
Exp. Hom.	21.7%	21.4%	22.1%	22.2%	23.4%	21.6%	23.0%	21.9%	21.3%	22.4%	20.7%
Hom. Test	0.452	0.533	0.425	0.922	0.298	0.299	0.994	0.068	0.999	0.959	0.546
Exact Test	0.490	0.159	0.257	0.364	0.912	0.793	0.617	0.440	0.468	0.852	0.971
CSF1PO											
Allele	FBI (N = 210)	BAHAMA (N = 158)	JAMAICA (N = 208)	TRINIDAD (N = 82)	CALIFORNIA (N = 200)	ALABAMA (N = 124)	FLORIDA (N = 100)	VIRGINIA (N = 199)	NEW YORK (N = 150)	ILLINOIS (N = 156)	MINNESOTA (N=150)
<6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0032	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0033	0.0000	0.0000

continues

TABLE 1—Continued.

CSF1PO											
Allele	FBI (N = 210)	BAHAMA (N = 158)	JAMAICA (N = 208)	TRINIDAD (N = 82)	CALIFORNIA (N = 200)	ALABAMA (N = 124)	FLORIDA (N = 100)	VIRGINIA (N = 199)	NEW YORK (N = 150)	ILLINOIS (N = 156)	MINNESOTA (N=150)
7	0.0429	0.0633	0.0481	0.0671	0.0550	0.0806	0.0650	0.0653	0.0533	0.0577	0.0700
8	0.0857	0.0570	0.0625	0.0549	0.0700	0.0766	0.0500	0.0503	0.0533	0.0865	0.0567
9	0.0333	0.0506	0.0313	0.0244	0.0350	0.0242	0.0300	0.0402	0.0467	0.0321	0.0233
10	0.2714	0.2342	0.2716	0.2744	0.3125	0.2823	0.2450	0.2688	0.2700	0.2821	0.2367
10.3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.000
11	0.2048	0.2215	0.2332	0.2134	0.2250	0.2379	0.2650	0.2186	0.2200	0.2212	0.2667
11.1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	0.3000	0.2880	0.2933	0.2744	0.2425	0.2298	0.2850	0.3040	0.2867	0.2724	0.2733
12.1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
13	0.0548	0.0696	0.0529	0.0793	0.0500	0.0645	0.0600	0.0427	0.0533	0.0449	0.0533
14	0.0071	0.0095	0.0072	0.0122	0.0100	0.0040	0.0000	0.0101	0.0133	0.0032	0.0133
15	0.0000	0.0032	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0067
Obs. Hom.	20.0%	16.5%	21.2%	29.3%	21.0%	17.7%	22.0%	20.6%	20.0%	21.2%	17.3%
Exp. Hom.	21.7%	19.9%	22.2%	20.6%	21.7%	20.3%	21.9%	22.1%	21.2%	21.4%	21.1%
Hom. Test	0.548	0.277	0.708	0.052	0.813	0.479	0.977	0.614	0.725	0.939	0.259
Exact Test	0.983	0.439	0.354	0.014	1.000	0.484	0.368	0.691	0.497	0.298	0.447
TPOX											
Allele	FBI (N = 209)	BAHAMA (N = 158)	JAMAICA (N = 208)	TRINIDAD (N = 82)	CALIFORNIA (N = 200)	ALABAMA (N = 124)	FLORIDA (N = 100)	VIRGINIA (N = 199)	NEW YORK (N = 150)	ILLINOIS (N = 156)	MINNESOTA (N=149)
<6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0861	0.0665	0.0673	0.0976	0.0625	0.0685	0.0800	0.0854	0.0633	0.0417	0.0873
7	0.0215	0.0253	0.0313	0.0122	0.0250	0.0202	0.0200	0.0075	0.0100	0.0224	0.0235
8	0.3684	0.3228	0.3822	0.3232	0.3325	0.3589	0.3950	0.3568	0.3067	0.3590	0.3222
9	0.1818	0.2184	0.2644	0.1646	0.2100	0.2177	0.1550	0.2035	0.2500	0.1987	0.2114
10	0.0933	0.0886	0.0745	0.0671	0.0600	0.0968	0.0900	0.0729	0.0733	0.1090	0.0839
11	0.2249	0.2437	0.1538	0.2866	0.2700	0.2177	0.2350	0.2462	0.2800	0.2340	0.2517
12	0.0239	0.0348	0.0264	0.0488	0.0400	0.0202	0.0250	0.0251	0.0167	0.0353	0.0201
13	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0025	0.0000	0.0000	0.0000
>13	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Obs. Hom.	21.5%	22.8%	23.6%	17.1%	26.0%	23.4%	28.0%	26.6%	20.7%	20.5%	19.5%
Exp. Hom.	23.5%	22.3%	25.0%	22.5%	23.5%	23.5%	24.7%	24.1%	24.2%	23.6%	22.5%
Hom. Test	0.509	0.881	0.640	0.235	0.412	0.968	0.445	0.398	0.310	0.364	0.377
Exact Test	0.443	0.617	0.011	0.233	0.412	0.582	0.362	0.121	0.627	0.042	0.051
TH01											
Allele	FBI (N = 210)	BAHAMA (N = 158)	JAMAICA (N = 208)	TRINIDAD (N = 82)	CALIFORNIA (N = 200)	ALABAMA (N = 124)	FLORIDA (N = 100)	VIRGINIA (N = 199)	NEW YORK (N = 150)	ILLINOIS (N = 156)	MINNESOTA (N=150)
<5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0032	0.0024	0.0061	0.0050	0.0040	0.0000	0.0075	0.0033	0.0000	0.0033
6	0.1095	0.1519	0.1394	0.1829	0.1175	0.1411	0.1450	0.0955	0.1467	0.1282	0.1467
7	0.4405	0.3797	0.3558	0.3110	0.4250	0.4476	0.3450	0.4146	0.3667	0.3974	0.3833
8	0.1857	0.2278	0.2548	0.2073	0.1875	0.2016	0.2300	0.2060	0.2400	0.2115	0.2267
8.3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	0.1452	0.1266	0.1587	0.2073	0.1350	0.1250	0.1650	0.1558	0.1533	0.1346	0.1200
9.3	0.1048	0.0949	0.0841	0.0732	0.1225	0.0806	0.1050	0.1131	0.0767	0.1122	0.1133
10	0.0143	0.0158	0.0048	0.0122	0.0075	0.0000	0.0100	0.0075	0.0133	0.0160	0.0067
>10	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Obs. Hom.	29.5%	24.1%	17.8%	25.6%	26.0%	27.4%	25.0%	27.1%	26.0%	28.2%	25.3%
Exp. Hom.	27.1%	24.2%	24.1%	21.7%	26.1%	28.0%	22.7%	25.9%	24.1%	24.8%	24.5%
Hom. Test	0.430	0.963	0.032	0.389	0.973	0.883	0.590	0.684	0.578	0.320	0.804
Exact Test	0.137	0.911	0.116	0.392	0.316	0.365	0.372	0.480	0.555	0.708	0.952
D16S539											
Allele	FBI (N = 209)	BAHAMA (N = 158)	JAMAICA (N = 206)	TRINIDAD (N = 82)	CALIFORNIA (N = 200)	ALABAMA (N = 124)	FLORIDA (N = 100)	VIRGINIA (N = 199)	NEW YORK (N = 99)	ILLINOIS (N = 155)	MINNESOTA (NA)
<8	0.0000	0.0000	0.0000	0.0000	0.0025	0.0000	0.0000	0.0000	0.0000	0.0032	
8	0.0359	0.0380	0.0340	0.0610	0.0400	0.0444	0.0350	0.0377	0.0303	0.0484	
9	0.1986	0.2184	0.2087	0.1646	0.1825	0.2137	0.2050	0.2060	0.1970	0.2129	

TABLE 1—Continued.

D16S539	FBI (N = 209)	BAHAMA (N = 158)	JAMAICA (N = 206)	TRINIDAD (N = 82)	CALIFORNIA (N = 200)	ALABAMA (N = 124)	FLORIDA (N = 100)	VIRGINIA (N = 199)	NEW YORK (N = 99)	ILLINOIS (N = 155)	MINNESOTA (NA)
Allele											
10	0.1100	0.0981	0.1092	0.1280	0.1050	0.1089	0.1450	0.1030	0.0960	0.0871	
11	0.2943	0.3006	0.3131	0.2866	0.3100	0.2823	0.2750	0.2688	0.3081	0.2806	
11.3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
12	0.1866	0.1741	0.1869	0.1768	0.2075	0.2419	0.2100	0.2010	0.2071	0.2290	
13	0.1651	0.1424	0.1383	0.1463	0.1300	0.1048	0.1300	0.1533	0.1212	0.1129	
14	0.0096	0.0253	0.0097	0.0366	0.0225	0.0040	0.0000	0.0276	0.0354	0.0258	
15	0.0000	0.0032	0.0000	0.0000	0.0000	0.0000	0.0000	0.0025	0.0051	0.0000	
Obs. Hom.	18.7%	22.8%	20.9%	18.3%	20.0%	21.0%	20.0%	18.6%	29.3%	26.5%	
Exp. Hom.	20.0%	19.8%	20.7%	17.8%	20.1%	20.5%	19.7%	18.9%	19.9%	19.7%	
Hom. Test	0.637	0.343	0.949	0.914	0.986	0.908	0.938	0.901	0.019	0.036	
Exact Test	0.110	0.043	0.524	0.859	0.064	0.901	0.754	0.177	0.210	0.498	

a) FBI data previously published (4).

Promega Corporation (Madison, WI) and following the manufacturers' recommendations. The amplified products were analyzed using either an ABI Prism™ 310 Genetic Analyzer, ABI Prism® 373 or 377 DNA Sequencer (PE Biosystems, Foster City, CA), or an FMBIO II (MiraiBio/Hitachi Genetic Systems, Alameda, CA) according to the manufacturer's recommended protocol. Details about the analytical process can be obtained by contacting the contributing laboratories.

Statistical Analysis: Allele designations were determined by comparison of the sample fragments with those of the allelic ladders. The frequency of each allele for each locus was calculated from the numbers of each genotype in the sample set (i.e., the gene count method). Unbiased estimates of expected heterozygosity were computed as described by Edwards et al. (2). Possible divergence from Hardy-Weinberg expectations (HWE) was tested by calculating the unbiased estimate of the expected homozygote/heterozygote frequencies (6–9) and the exact test (10), based on 2000 shuffling experiments. The computer program to perform these tests was developed by R. Chakraborty (University of Texas School of Public Health, Houston, Texas). The values for  $F_{ST}$  were determined as described by Weir and Cockerham (11) using the TFPGA program kindly provided by M. Miller (Northern Arizona University at Flagstaff).

**Results and Discussion**

The distributions of observed allele frequencies for the STR loci in the 41 data sets are shown in Tables 1–5. The observed and expected homozygosities and exact test results for departures from HWE are also provided.

All loci are highly polymorphic in all sample populations. Most alleles (excluding rare variants) are observed in all populations. The sampled populations of African Americans show the highest within-population variation and the Native Americans have the lowest within-population variation. While there were some initial indications of departure from HWE, none were significant after correcting for sampling (i.e., Bonferroni correction (12)). The majority of the initially found departures from HWE are due to geno-

types consisting of rare alleles (e.g., those occurring below five counts in the data). These alleles are of virtually no consequence, when such rare allele frequencies are replaced by a minimum threshold allele frequency applicable to the locus/population combination (13,14). To determine whether or not the uncorrected departures from HWE may have an impact on profile frequency estimates, one might suggest that comparisons of allele frequencies between subgroups be assessed by standard contingency table analysis. However, such an analysis is uninformative. For even moderately large sample sizes, standard contingency table analysis exhibits extreme sensitivity to small perturbations, i.e., it frequently rejects the null hypothesis of no difference even if the difference is of little consequence (15). Traditional population genetic approaches that describe the amount of heterogeneity among populations are much more informative than are significance tests.

Therefore, as recommended by the National Research Council (NRC) II Report (14), Wright's  $F_{ST}$  estimates (16,17) were calculated (Table 6). The  $F_{ST}$  estimates over all thirteen STR loci are 0.0006 for African Americans, –0.0005 for Caucasians, 0.0021 for Hispanics, 0.0039 for Asians, and 0.0282 for Native Americans. The data support that the degree of relatedness in the African American, Caucasian, Hispanic, and Asian groups is low. In fact, the Hispanic value is likely inflated because southeastern and southwestern Hispanic data sets were pooled for the  $F_{ST}$  calculation. Typically, these two groups are not merged for profile frequency estimates (although these data suggest that pooling is possible). Budowle, et al. (18) reported an  $F_{ST}$  estimate of approximately 0.0090 for nine of the thirteen core STR loci in Chamorros and Filipinos. For Native Americans (in the current study) a larger estimate of 0.0282 was observed. This  $F_{ST}$  value is consistent with expectations for more isolated groups, such as Native Americans. Further, the  $F_{ST}$  values estimated from these data support the generalized recommendations of the National Research Council for taking a value of 0.01 as a conservative threshold for most population groups and the value of 0.03 for Native Americans as reasonable. Further studies are underway for  $G_{ST}$  estimates using additional measures of within-population variation based on variance in allele size.

TABLE 2—Observed allele frequency distributions for nine U.S. Caucasians sample populations.<sup>a</sup>

D3S1358									
Allele	FBI <sup>a</sup> (N = 203)	CALIFORNIA (N = 150)	ALABAMA (N = 150)	FLORIDA (N = 201)	VIRGINIA (N = 197)	NEW YORK (N = 141)	MICHIGAN (N = 160)	MINNESOTA (N = 150)	CANADA (N = 166)
<12	0.0000	0.0033	0.0033	0.0025	0.0025	0.0000	0.0000	0.0000	0.0000
12	0.0000	0.0033	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0030
13	0.0025	0.0000	0.0067	0.0050	0.0000	0.0035	0.0031	0.0000	0.0060
14	0.1404	0.1367	0.1533	0.1244	0.1269	0.1312	0.1031	0.1433	0.1325
15	0.2463	0.2800	0.2300	0.2736	0.2437	0.2943	0.2844	0.2833	0.2892
15.2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
16	0.2315	0.2167	0.2567	0.2338	0.2563	0.2482	0.2375	0.2333	0.2259
17	0.2118	0.1967	0.2267	0.1940	0.1929	0.2021	0.2156	0.1933	0.1687
17.1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18	0.1626	0.1500	0.1000	0.1493	0.1497	0.1170	0.1500	0.1333	0.1596
19	0.0049	0.0133	0.0233	0.0174	0.0228	0.0035	0.0031	0.0133	0.0151
>19	0.0000	0.0000	0.0000	0.0000	0.0051	0.0000	0.0031	0.0000	0.0000
Obs. Hom.	19.2%	26.0%	22.0%	23.4%	20.3%	17.0%	21.3%	23.3%	22.9%
Exp. Hom.	20.3%	20.3%	20.2%	20.3%	19.9%	21.7%	21.4%	20.8%	20.4%
Hom. Test	0.691	0.081	0.574	0.282	0.896	0.176	0.951	0.444	0.426
Exact Test	0.084	0.648	0.982	0.472	0.924	0.896	0.004	0.253	0.225
vWA									
Allele	FBI (N = 196)	CALIFORNIA (N = 150)	ALABAMA (N = 150)	FLORIDA (N = 246)	VIRGINIA (N = 197)	NEW YORK (N = 141)	MICHIGAN (N = 160)	MINNESOTA (N = 150)	CANADA (N = 166)
11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0030
13	0.0051	0.0000	0.0000	0.0020	0.0025	0.0035	0.0000	0.0000	0.0000
14	0.1020	0.1033	0.1067	0.0833	0.0939	0.1099	0.0844	0.0800	0.1295
15	0.1122	0.1100	0.0933	0.0894	0.0939	0.0922	0.1063	0.0867	0.1205
16	0.2015	0.2333	0.2133	0.2093	0.2284	0.2270	0.2188	0.2300	0.1837
17	0.2628	0.2800	0.2800	0.2967	0.2792	0.2908	0.2844	0.2567	0.2771
18	0.2219	0.1733	0.2067	0.1931	0.2259	0.1738	0.2000	0.2300	0.1898
19	0.0842	0.0767	0.0833	0.0996	0.0685	0.0674	0.0938	0.0967	0.0904
20	0.0102	0.0233	0.0167	0.0244	0.0051	0.0319	0.0125	0.0200	0.0060
21	0.0000	0.0000	0.0000	0.0020	0.0000	0.0035	0.0000	0.0000	0.0000
>21	0.0000	0.0000	0.0000	0.0000	0.0025	0.0000	0.0000	0.0000	0.0000
Obs. Hom.	22.4%	18.0%	16.7%	24.8%	23.4%	22.0%	15.0%	19.3%	19.3%
Exp. Hom.	18.7%	18.9%	19.1%	19.3%	20.1%	19.0%	19.4%	19.3%	18.4%
Hom. Test	0.179	0.769	0.444	0.029	0.263	0.358	0.163	0.983	0.760
Exact Test	0.063	0.488	0.520	0.484	0.052	0.281	0.279	0.698	0.523
FGA									
Allele	FBI (N = 196)	CALIFORNIA (N = 150)	ALABAMA (N = 150)	FLORIDA (N = 201)	VIRGINIA (N = 197)	NEW YORK (N = 141)	MICHIGAN (N = 160)	MINNESOTA (N = 150)	CANADA (N = 166)
<18	0.0000	0.0033	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18	0.0306	0.0033	0.0133	0.0174	0.0102	0.0177	0.0188	0.0200	0.0090
18.2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19	0.0561	0.0633	0.0433	0.0771	0.0533	0.0461	0.0656	0.0767	0.0633
19.2	0.0000	0.0000	0.0000	0.0025	0.0025	0.0000	0.0000	0.0000	0.0000
19.3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	0.1454	0.1500	0.1367	0.1592	0.1472	0.1099	0.1656	0.1300	0.1235
20.2	0.0026	0.0000	0.0000	0.0000	0.0000	0.0035	0.0000	0.0000	0.0000
21	0.1735	0.1467	0.1700	0.1493	0.1878	0.1489	0.1438	0.1800	0.1807
21.2	0.0000	0.0033	0.0000	0.0050	0.0000	0.0000	0.0031	0.0033	0.0000
22	0.1888	0.1767	0.1900	0.1642	0.1675	0.1738	0.1625	0.1667	0.2289
22.2	0.0102	0.0067	0.0100	0.0050	0.0127	0.0071	0.0094	0.0200	0.0000
22.3	0.0000	0.0000	0.0000	0.0000	0.0025	0.0000	0.0000	0.0000	0.0000
23	0.1582	0.1300	0.1467	0.1791	0.1523	0.1738	0.1375	0.1367	0.1295

TABLE 2—Continued.

FGA									
Allele	FBI (N = 196)	CALIFORNIA (N = 150)	ALABAMA (N = 150)	FLORIDA (N = 201)	VIRGINIA (N = 197)	NEW YORK (N = 141)	MICHIGAN (N = 160)	MINNESOTA (N = 150)	CANADA (N = 166)
23.2	0.0000	0.0100	0.0033	0.0100	0.0000	0.0000	0.0031	0.0000	0.0000
23.3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
24	0.1378	0.1500	0.1567	0.1294	0.1244	0.1738	0.1594	0.1467	0.1446
24.2	0.0000	0.0033	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
24.3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
25	0.0689	0.1000	0.1100	0.0746	0.0838	0.0922	0.0875	0.0833	0.0964
25.1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
25.2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
25.3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
26	0.0179	0.0433	0.0200	0.0249	0.0431	0.0461	0.0281	0.0200	0.0181
26.2	0.0000	0.0033	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
27	0.0102	0.0033	0.0000	0.0025	0.0127	0.0071	0.0156	0.0100	0.0060
27.2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
28	0.0000	0.0033	0.0000	0.0000	0.0000	0.0000	0.0000	0.0033	0.0000
29	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0033	0.0000
30	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
>30	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Obs. Hom.	12.2%	17.3%	8.7%	11.9%	10.7%	9.2%	15.6%	18.0%	12.7%
Exp. Hom.	13.8%	12.8%	14.2%	13.4%	13.4%	13.5%	13.0%	12.9%	14.9%
Hom. Test	0.527	0.095	0.054	0.548	0.265	0.137	0.314	0.060	0.413
Exact Test	0.270	0.058	0.529	0.089	0.346	0.297	0.316	0.286	0.936
D8S1179									
Allele	FBI (N = 196)	CALIFORNIA (N = 150)	ALABAMA (N = 150)	FLORIDA (N = 201)	VIRGINIA (N = 196)	NEW YORK (N = 141)	MICHIGAN (N = 160)	MINNESOTA (N = 150)	CANADA (N = 166)
<9	0.0179	0.0233	0.0167	0.0149	0.0153	0.0071	0.0219	0.0267	0.0181
9	0.0102	0.0033	0.0033	0.0124	0.0051	0.0106	0.0063	0.0233	0.0060
10	0.1020	0.0733	0.1233	0.0920	0.0944	0.0993	0.0938	0.0800	0.0934
11	0.0587	0.0667	0.0967	0.0821	0.0842	0.0638	0.0844	0.0800	0.0693
12	0.1454	0.1233	0.0867	0.1542	0.1454	0.1596	0.1438	0.1267	0.1627
13	0.3393	0.3733	0.3133	0.3557	0.3112	0.3156	0.3469	0.3000	0.3373
14	0.2015	0.1733	0.2200	0.1816	0.2041	0.1950	0.1500	0.2233	0.1867
15	0.1097	0.1167	0.1033	0.0622	0.0969	0.0993	0.1156	0.1067	0.0964
16	0.0128	0.0400	0.0300	0.0423	0.0357	0.0496	0.0344	0.0300	0.0271
17	0.0026	0.0067	0.0067	0.0025	0.0077	0.0000	0.0031	0.0033	0.0030
>17	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Obs. Hom.	16.8%	17.3%	19.3%	24.4%	17.9%	20.6%	22.5%	10.7%	17.5%
Exp. Hom.	20.1%	20.8%	18.8%	20.3%	18.5%	18.7%	19.2%	18.0%	19.7%
Hom. Test	0.250	0.300	0.863	0.146	0.829	0.562	0.288	0.020	0.477
Exact Test	0.786	0.563	0.014	0.081	0.972	0.391	0.036	0.127	0.471
D21S11									
Allele	FBI (N = 196)	CALIFORNIA (N = 150)	ALABAMA (N = 150)	FLORIDA (N = 201)	VIRGINIA (N = 196)	NEW YORK (N = 140)	MICHIGAN (N = 160)	MINNESOTA (N = 150)	CANADA (N = 166)
<24.2	0.0000	0.0000	0.0033	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
24.2	0.0051	0.0000	0.0000	0.0000	0.0000	0.0036	0.0000	0.0000	0.0030
24.3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
25	0.0000	0.0000	0.0000	0.0000	0.0051	0.0000	0.0000	0.0000	0.0000
25.2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

continues

TABLE 2—Continued.

D21S11									
Allele	FBI (N = 196)	CALIFORNIA (N = 150)	ALABAMA (N = 150)	FLORIDA (N = 201)	VIRGINIA (N = 196)	NEW YORK (N = 140)	MICHIGAN (N = 160)	MINNESOTA (N = 150)	CANADA (N = 166)
26	0.0000	0.0033	0.0033	0.0000	0.0000	0.0000	0.0031	0.0000	0.0030
26.2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
27	0.0459	0.0267	0.0400	0.0249	0.0204	0.0429	0.0219	0.0333	0.0241
28	0.1658	0.1933	0.1767	0.1517	0.1199	0.1393	0.1781	0.1700	0.1536
28.2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
29	0.1811	0.1967	0.1867	0.2289	0.2117	0.2179	0.2500	0.1867	0.2169
29.2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0067	0.0030
29.3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0033	0.0030
30	0.2321	0.2733	0.2733	0.2786	0.2653	0.2143	0.2156	0.2700	0.2048
30.2	0.0383	0.0200	0.0233	0.0199	0.0408	0.0214	0.0438	0.0233	0.0783
30.3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
31	0.0714	0.0733	0.0800	0.0547	0.0689	0.0679	0.0469	0.0733	0.0934
31.1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
31.2	0.0995	0.0800	0.0933	0.1020	0.0765	0.1250	0.1031	0.0800	0.0934
32	0.0153	0.0033	0.0167	0.0075	0.0179	0.0214	0.0125	0.0067	0.0181
32.1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
32.2	0.1122	0.1000	0.0700	0.0970	0.1250	0.0964	0.0906	0.0933	0.0813
32.3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
33	0.0000	0.0000	0.0000	0.0025	0.0000	0.0000	0.0063	0.0067	0.0000
33.1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
33.2	0.0306	0.0233	0.0300	0.0299	0.0408	0.0429	0.0281	0.0467	0.0211
33.3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
34	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
34.1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
34.2	0.0000	0.0033	0.0033	0.0025	0.0051	0.0071	0.0000	0.0000	0.0030
35	0.0000	0.0033	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
35.2	0.0026	0.0000	0.0000	0.0000	0.0026	0.0000	0.0000	0.0000	0.0000
36	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
>36	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Obs. Hom.	13.3%	13.3%	18.7%	18.9%	19.4%	10.7%	16.3%	12.0%	13.9%
Exp. Hom.	14.4%	17.1%	16.1%	17.6%	15.8%	14.4%	16.3%	15.8%	14.2%
Hom. Test	0.640	0.215	0.399	0.620	0.166	0.215	0.999	0.199	0.911
Exact Test	0.415	0.648	0.008	0.358	0.323	0.923	0.058	0.884	0.622
D18S51									
Allele	FBI (N = 196)	CALIFORNIA (N = 150)	ALABAMA (N = 150)	FLORIDA (N = 201)	VIRGINIA (N = 196)	NEW YORK (N = 141)	MICHIGAN (N = 160)	MINNESOTA (N = 150)	CANADA (N = 166)
<11	0.0128	0.0067	0.0133	0.0075	0.0051	0.0106	0.0031	0.0100	0.0120
11	0.0128	0.0167	0.0033	0.0100	0.0102	0.0177	0.0250	0.0100	0.0090
12	0.1276	0.1367	0.1300	0.1567	0.1327	0.1241	0.1313	0.1267	0.0934
13	0.1224	0.1267	0.1467	0.1393	0.1352	0.1277	0.1000	0.1067	0.1084
13.2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
14	0.1735	0.1500	0.1800	0.1493	0.1480	0.1418	0.1875	0.1867	0.1506
14.2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
15	0.1276	0.1467	0.1567	0.1617	0.1556	0.1879	0.1625	0.1633	0.1777
15.2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
16	0.1071	0.1600	0.1100	0.1318	0.1480	0.1170	0.1188	0.1167	0.1837
16.2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
17	0.1556	0.0933	0.1333	0.1070	0.1403	0.1064	0.1188	0.1233	0.1114
18	0.0918	0.0767	0.0733	0.0672	0.0689	0.0957	0.0625	0.0867	0.0663
19	0.0357	0.0433	0.0267	0.0398	0.0230	0.0567	0.0531	0.0367	0.0361
20	0.0255	0.0200	0.0200	0.0124	0.0153	0.0071	0.0344	0.0133	0.0361
20.2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
21	0.0051	0.0000	0.0067	0.0124	0.0077	0.0035	0.0000	0.0033	0.0120

TABLE 2—Continued.

D18S51									
Allele	FBI (N = 196)	CALIFORNIA (N = 150)	ALABAMA (N = 150)	FLORIDA (N = 201)	VIRGINIA (N = 196)	NEW YORK (N = 141)	MICHIGAN (N = 160)	MINNESOTA (N = 150)	CANADA (N = 166)
21.2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
22	0.0026	0.0133	0.0000	0.0050	0.0077	0.0035	0.0031	0.0133	0.0030
>22	0.0000	0.0100	0.0000	0.0000	0.0026	0.0000	0.0000	0.0033	0.0000
Obs. Hom.	11.2%	14.0%	16.7%	12.9%	12.8%	11.3%	11.3%	9.3%	13.3%
Exp. Hom.	12.2%	11.9%	12.9%	12.6%	12.7%	12.2%	12.3%	12.4%	12.6%
Hom. Test	0.683	0.422	0.169	0.873	0.985	0.760	0.691	0.251	0.790
Exact Test	0.622	0.820	0.418	0.688	0.971	0.762	0.889	0.125	0.594
D5S818									
Allele	FBI (N = 195)	CALIFORNIA (N = 150)	ALABAMA (N = 150)	FLORIDA (N = 246)	VIRGINIA (N = 197)	NEW YORK (N = 141)	MICHIGAN (N = 150)	MINNESOTA (N = 150)	CANADA (N = 166)
<7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0067	0.0000	0.0000	0.0000	0.0106	0.0000	0.0133	0.0000
8	0.0000	0.0000	0.0000	0.0020	0.0025	0.0035	0.0067	0.0000	0.0000
9	0.0308	0.0600	0.0300	0.0325	0.0457	0.0496	0.0367	0.0367	0.0331
9.2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	0.0487	0.0767	0.0367	0.0711	0.0584	0.0816	0.0500	0.0600	0.0723
11	0.4103	0.3400	0.4167	0.3740	0.3858	0.3794	0.3600	0.3633	0.3464
12	0.3538	0.3600	0.3667	0.3557	0.3350	0.2801	0.3433	0.3633	0.3614
13	0.1462	0.1433	0.1367	0.1585	0.1523	0.1879	0.1967	0.1567	0.1717
14	0.0077	0.0067	0.0100	0.0061	0.0203	0.0071	0.0067	0.0067	0.0120
15	0.0026	0.0067	0.0033	0.0000	0.0000	0.0000	0.0000	0.0000	0.0030
>15	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Obs. Hom.	30.3%	31.3%	33.3%	29.7%	28.4%	26.2%	23.3%	28.0%	28.3%
Exp. Hom.	31.7%	27.3%	32.7%	29.6%	28.8%	26.4%	28.8%	29.1%	28.4%
Hom. Test	0.675	0.267	0.865	0.986	0.899	0.956	0.141	0.759	0.971
Exact Test	0.570	0.208	0.690	0.982	0.880	0.595	0.647	0.560	0.982
D13S317									
Allele	FBI (N = 196)	CALIFORNIA (N = 150)	ALABAMA (N = 150)	FLORIDA (N = 246)	VIRGINIA (N = 197)	NEW YORK (N = 141)	MICHIGAN (N = 151)	MINNESOTA (N = 150)	CANADA (N = 166)
<8	0.0000	0.0033	0.0000	0.0020	0.0025	0.0000	0.0033	0.0000	0.0000
8	0.0995	0.1300	0.1167	0.1199	0.1371	0.1206	0.0993	0.1300	0.0934
8.1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	0.0765	0.0567	0.0800	0.0874	0.0635	0.0816	0.0629	0.0700	0.0934
10	0.0510	0.0733	0.0667	0.0589	0.0482	0.0532	0.0861	0.0633	0.0452
11	0.3189	0.3133	0.3200	0.3232	0.3173	0.3475	0.3576	0.2967	0.3012
12	0.3087	0.2767	0.2667	0.2541	0.2766	0.2766	0.2881	0.3067	0.3012
13	0.1097	0.1000	0.1100	0.1240	0.1142	0.0851	0.0629	0.0900	0.1235
13.3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
14	0.0357	0.0400	0.0367	0.0305	0.0381	0.0355	0.0397	0.0433	0.0422
15	0.0000	0.0067	0.0033	0.0000	0.0025	0.0000	0.0000	0.0000	0.0000
>15	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Obs. Hom.	27.0%	21.3%	20.7%	25.6%	25.9%	22.0%	27.2%	20.0%	19.9%
Exp. Hom.	22.7%	20.9%	20.9%	20.9%	21.5%	22.7%	23.5%	21.5%	21.6%
Hom. Test	0.143	0.902	0.949	0.070	0.132	0.838	0.292	0.650	0.599
Exact Test	0.395	0.298	0.394	0.039	0.329	0.982	0.409	0.187	0.857

continues

TABLE 2—Continued.

D7S820									
Allele	FBI (N = 203)	CALIFORNIA (N = 150)	ALABAMA (N = 150)	FLORIDA (N = 246)	VIRGINIA (N = 197)	NEW YORK (N = 141)	MICHIGAN (N = 151)	MINNESOTA (N = 150)	CANADA (N = 166)
6	0.0025	0.0033	0.0033	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6.3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0172	0.0133	0.0267	0.0285	0.0279	0.0142	0.0331	0.0167	0.0181
8	0.1626	0.1567	0.1567	0.1626	0.1396	0.1560	0.1589	0.1733	0.1627
8.1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8.2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	0.1478	0.1533	0.1600	0.1260	0.1396	0.1383	0.1391	0.1500	0.1325
9.1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9.3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	0.2906	0.2433	0.2967	0.2622	0.3147	0.3156	0.2848	0.2700	0.2620
10.1	0.0000	0.0033	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10.3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
11	0.2020	0.2233	0.1500	0.2093	0.1777	0.1986	0.1987	0.1833	0.2500
11.3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	0.1404	0.1667	0.1633	0.1646	0.1650	0.1418	0.1391	0.1567	0.1265
13	0.0296	0.0233	0.0367	0.0427	0.0254	0.0319	0.0364	0.0400	0.0452
14	0.0074	0.0133	0.0067	0.0041	0.0102	0.0035	0.0099	0.0100	0.0030
>14	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Obs. Hom.	22.7%	17.3%	16.0%	18.3%	18.8%	21.3%	17.2%	16.7%	16.9%
Exp. Hom.	19.2%	18.3%	18.7%	18.3%	19.6%	20.1%	18.4%	18.3%	19.1%
Hom. Test	0.218	0.757	0.401	0.998	0.765	0.728	0.700	0.608	0.462
Exact Test	0.321	0.688	0.673	0.969	0.724	0.452	0.353	0.498	0.992
CSF1PO									
Allele	FBI (N = 203)	CALIFORNIA (N = 150)	ALABAMA (N = 150)	FLORIDA (N = 246)	VIRGINIA (N = 197)	NEW YORK (N = 142)	MICHIGAN (N = 146)	MINNESOTA (N = 150)	CANADA (N = 166)
<6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0020	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0025	0.0033	0.0000	0.0000	0.0025	0.0000	0.0000	0.0000	0.0000
8	0.0049	0.0000	0.0000	0.0000	0.0000	0.0070	0.0000	0.0067	0.0060
9	0.0197	0.0400	0.0267	0.0163	0.0381	0.0176	0.0308	0.0433	0.0241
10	0.2537	0.2267	0.2700	0.2541	0.2335	0.2641	0.2842	0.2667	0.2711
10.3	0.0025	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
11	0.3005	0.3033	0.2933	0.3679	0.2944	0.2993	0.3151	0.2933	0.3223
11.1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	0.3251	0.3200	0.3200	0.3069	0.3477	0.3345	0.2979	0.3200	0.3072
12.1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
13	0.0714	0.0800	0.0667	0.0488	0.0736	0.0739	0.0616	0.0700	0.0482
14	0.0148	0.0233	0.0167	0.0041	0.0102	0.0035	0.0068	0.0000	0.0151
15	0.0049	0.0033	0.0067	0.0000	0.0000	0.0000	0.0034	0.0000	0.0060
Obs. Hom.	23.6%	28.0%	26.0%	26.4%	23.9%	29.6%	32.9%	28.7%	25.3%
Exp. Hom.	26.4%	25.2%	26.4%	29.5%	26.7%	27.4%	27.1%	26.4%	27.3%
Hom. Test	0.368	0.427	0.903	0.285	0.364	0.570	0.117	0.527	0.568
Exact Test	0.620	0.832	0.843	0.754	0.780	0.443	0.046	0.000	0.912
TPOX									
Allele	FBI (N = 203)	CALIFORNIA (N = 150)	ALABAMA (N = 150)	FLORIDA (N = 246)	VIRGINIA (N = 197)	NEW YORK (N = 142)	MICHIGAN (N = 147)	MINNESOTA (N = 150)	CANADA (N = 166)
<6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0033	0.0000	0.0000	0.0000	0.0034	0.0000	0.0000
7	0.0025	0.0000	0.0000	0.0000	0.0000	0.0035	0.0102	0.0000	0.0000

TABLE 2—Continued.

TPOX									
Allele	FBI (N = 203)	CALIFORNIA (N = 150)	ALABAMA (N = 150)	FLORIDA (N = 246)	VIRGINIA (N = 197)	NEW YORK (N = 142)	MICHIGAN (N = 147)	MINNESOTA (N = 150)	CANADA (N = 166)
8	0.5443	0.5267	0.5433	0.5488	0.5254	0.5458	0.5408	0.5600	0.5331
9	0.1232	0.1100	0.1300	0.1037	0.0939	0.1338	0.1190	0.1000	0.1175
10	0.0369	0.0467	0.0400	0.0650	0.0584	0.0704	0.0748	0.0433	0.0452
11	0.2537	0.2733	0.2400	0.2500	0.2690	0.2148	0.2313	0.2533	0.2560
12	0.0394	0.0433	0.0433	0.0325	0.0533	0.0317	0.0204	0.0433	0.0482
13	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
>13	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Obs. Hom.	33.0%	38.0%	32.0%	42.7%	35.5%	34.5%	40.1%	40.0%	35.5%
Exp. Hom.	37.7%	36.6%	37.1%	37.8%	36.2%	36.6%	36.4%	38.9%	36.6%
Hom. Test	0.166	0.724	0.195	0.118	0.849	0.611	0.348	0.792	0.777
Exact Test	0.035	0.152	0.516	0.295	0.468	0.148	0.085	0.161	0.762
TH01									
Allele	FBI (N = 203)	CALIFORNIA (N = 150)	ALABAMA (N = 150)	FLORIDA (N = 246)	VIRGINIA (N = 197)	NEW YORK (N = 142)	MICHIGAN (N = 147)	MINNESOTA (N = 150)	CANADA (N = 166)
<5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0033	0.0000	0.0000	0.0051	0.0035	0.0034	0.0000	0.0090
6	0.2266	0.2200	0.1967	0.2378	0.2411	0.2113	0.2143	0.2467	0.2048
7	0.1724	0.1967	0.1667	0.1687	0.2081	0.1620	0.2177	0.2067	0.1988
8	0.1256	0.0900	0.1300	0.1199	0.0914	0.1092	0.0884	0.1000	0.1054
8.3	0.0025	0.0000	0.0033	0.0000	0.0025	0.0000	0.0000	0.0000	0.0000
9	0.1650	0.1667	0.1867	0.1687	0.1472	0.1937	0.1837	0.1467	0.1596
9.3	0.3054	0.3233	0.3067	0.2947	0.2944	0.3063	0.2789	0.2900	0.3072
10	0.0025	0.0000	0.0100	0.0102	0.0102	0.0106	0.0136	0.0100	0.0151
>10	0.0000	0.0000	0.0000	0.0000	0.0000	0.0035	0.0000	0.0000	0.0000
Obs. Hom.	27.1%	24.7%	20.7%	24.8%	24.9%	26.8%	17.0%	23.3%	18.7%
Exp. Hom.	21.5%	22.5%	21.0%	21.3%	21.6%	21.1%	21.0%	21.7%	21.0%
Hom. Test	0.054	0.524	0.927	0.183	0.269	0.102	0.233	0.620	0.455
Exact Test	0.423	0.253	0.974	0.515	0.642	0.866	0.089	0.381	0.972
D16S539									
Allele	FBI (N = 202)	CALIFORNIA (N = 150)	ALABAMA (N = 150)	FLORIDA (N = 246)	VIRGINIA (N = 197)	NEW YORK (NA)	MICHIGAN (N = 147)	MINNESOTA (NA)	CANADA (NA)
<8	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000		
8	0.0198	0.0233	0.0067	0.0183	0.0127		0.0068		
9	0.1040	0.1300	0.1133	0.1179	0.1396		0.1156		
10	0.0668	0.0533	0.0500	0.0569	0.0711		0.1020		
11	0.2723	0.2733	0.3133	0.3049	0.2640		0.2925		
11.3	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000		
12	0.3391	0.3300	0.3100	0.3150	0.3325		0.2687		
13	0.1634	0.1500	0.1900	0.1667	0.1574		0.1803		
14	0.0322	0.0400	0.0167	0.0203	0.0203		0.0306		
15	0.0025	0.0000	0.0000	0.0000	0.0025		0.0034		
Obs. Hom.	20.3%	20.7%	28.7%	25.2%	25.9%		15.6%		
Exp. Hom.	23.1%	22.5%	24.4%	23.6%	22.8%		21.2%		
Hom. Test	0.351	0.583	0.218	0.562	0.304		0.097		
Exact Test	0.704	0.849	0.611	0.524	0.719		0.223		

a) FBI data previously published (4).

TABLE 3—Observed allele frequency distributions for eight Hispanic sample populations.<sup>a</sup>

D3S1358								
Allele	FBI <sup>a</sup> (N = 209)	CALIFORNIA (N = 200)	FLORIDA (N = 191)	NEW YORK (N = 151)	MICHIGAN (N = 150)	MINNESOTA (N = 149)	ARIZONA (N = 234)	MEXICO (N = 143)
<12	0.0000	0.0000	0.0026	0.0033	0.0000	0.0000	0.0021	0.0000
12	0.0000	0.0000	0.0000	0.0066	0.0000	0.0034	0.0000	0.0035
13	0.0024	0.0050	0.0105	0.0033	0.0033	0.0000	0.0107	0.0105
14	0.0789	0.0925	0.0838	0.0397	0.1167	0.0772	0.0726	0.0734
15	0.4258	0.4175	0.3534	0.3576	0.3500	0.3456	0.3440	0.4091
15.2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
16	0.2656	0.2375	0.2461	0.2947	0.2367	0.2685	0.2607	0.2378
17	0.1268	0.1575	0.1623	0.1954	0.1800	0.1913	0.1944	0.1469
17.1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18	0.0837	0.0850	0.1387	0.0927	0.1000	0.1040	0.1111	0.1154
19	0.0144	0.0025	0.0026	0.0066	0.0100	0.0067	0.0043	0.0035
>19	0.0024	0.0025	0.0000	0.0000	0.0033	0.0034	0.0000	0.0000
Obs. Hom.	26.3%	26.5%	24.6%	29.8%	18.7%	24.2%	23.1%	32.2%
Exp. Hom.	28.0%	27.0%	23.6%	26.1%	23.2%	24.2%	24.0%	26.2%
Hom. Test	0.595	0.886	0.747	0.297	0.188	0.982	0.734	0.103
Exact Test	0.333	0.563	0.972	0.222	0.188	0.981	0.290	0.029
vWA								
Allele	FBI (N = 203)	CALIFORNIA (N = 200)	FLORIDA (N = 240)	NEW YORK (N = 152)	MICHIGAN (N = 150)	MINNESOTA (N = 149)	ARIZONA (N = 234)	MEXICO (N = 143)
11	0.0025	0.0025	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
13	0.0000	0.0050	0.0042	0.0066	0.0000	0.0000	0.0021	0.0000
14	0.0616	0.0525	0.0688	0.0724	0.0767	0.0738	0.0812	0.0874
15	0.0764	0.0950	0.1000	0.1349	0.1033	0.1242	0.1346	0.1049
16	0.3596	0.3475	0.2688	0.2862	0.2667	0.2987	0.2821	0.3182
17	0.2217	0.2575	0.3042	0.2204	0.2767	0.2215	0.2201	0.2972
18	0.1946	0.1850	0.1875	0.1414	0.1600	0.2013	0.1752	0.1364
19	0.0714	0.0450	0.0500	0.1151	0.1000	0.0604	0.0919	0.0559
20	0.0123	0.0075	0.0167	0.0230	0.0167	0.0168	0.0128	0.0000
21	0.0000	0.0025	0.0000	0.0000	0.0000	0.0034	0.0000	0.0000
>21	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Obs. Hom.	24.6%	23.5%	18.3%	19.7%	24.7%	16.8%	16.7%	24.5%
Exp. Hom.	22.9%	23.3%	21.6%	18.5%	19.7%	20.1%	19.0%	22.7%
Hom. Test	0.564	0.954	0.222	0.696	0.130	0.313	0.357	0.617
Exact Test	0.928	0.889	0.775	0.251	0.196	0.298	0.276	0.566
FGA								
Allele	FBI (N = 203)	CALIFORNIA (N = 200)	FLORIDA (N = 191)	NEW YORK (N = 151)	MICHIGAN (N = 150)	MINNESOTA (N = 149)	ARIZONA (N = 234)	MEXICO (N = 143)
<18	0.0000	0.0000	0.0000	0.0033	0.0000	0.0034	0.0000	0.0000
18	0.0025	0.0175	0.0105	0.0099	0.0133	0.0101	0.0043	0.0105
18.2	0.0000	0.0000	0.0000	0.0066	0.0000	0.0000	0.0000	0.0000
19	0.0788	0.0800	0.0838	0.0430	0.0600	0.0671	0.0769	0.0874
19.2	0.0000	0.0025	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19.3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	0.0714	0.0975	0.1178	0.1159	0.1200	0.0839	0.0962	0.1049
20.2	0.0025	0.0000	0.0000	0.0000	0.0000	0.0000	0.0043	0.0000

TABLE 3—Continued.

FGA	FBI (N = 203)	CALIFORNIA (N = 200)	FLORIDA (N = 191)	NEW YORK (N = 151)	MICHIGAN (N = 150)	MINNESOTA (N = 149)	ARIZONA (N = 234)	MEXICO (N = 143)
Allele								
21	0.1305	0.1175	0.1361	0.1258	0.1533	0.1544	0.1368	0.1154
21.2	0.0025	0.0025	0.0026	0.0066	0.0000	0.0034	0.0021	0.0000
22	0.1773	0.1325	0.1492	0.1954	0.1900	0.1544	0.1346	0.1189
22.2	0.0049	0.0025	0.0052	0.0000	0.0033	0.0000	0.0000	0.0000
22.3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
23	0.1404	0.1350	0.1492	0.1490	0.1267	0.1141	0.1261	0.1573
23.2	0.0074	0.0000	0.0052	0.0000	0.0033	0.0067	0.0064	0.0035
23.3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
24	0.1256	0.1450	0.1466	0.1225	0.1600	0.1812	0.1261	0.1748
24.2	0.0000	0.0025	0.0000	0.0000	0.0000	0.0034	0.0000	0.0000
24.3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
25	0.1379	0.1550	0.1126	0.1126	0.1000	0.1275	0.1517	0.1224
25.1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
25.2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
25.3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
26	0.0837	0.0925	0.0471	0.0563	0.0367	0.0638	0.1026	0.0734
26.2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
27	0.0320	0.0125	0.0262	0.0364	0.0200	0.0168	0.0256	0.0210
27.2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
28	0.0025	0.0025	0.0052	0.0132	0.0133	0.0101	0.0043	0.0070
29	0.0000	0.0000	0.0000	0.0033	0.0000	0.0000	0.0000	0.0000
30	0.0000	0.0025	0.0026	0.0000	0.0000	0.0000	0.0021	0.0035
>30	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Obs. Hom.	12.3%	8.5%	11.5%	11.9%	13.3%	12.8%	14.1%	5.6%
Exp. Hom.	12.0%	11.7%	11.9%	12.1%	12.8%	12.3%	11.6%	11.9%
Hom. Test	0.900	0.155	0.873	0.942	0.859	0.867	0.236	0.019
Exact Test	0.635	0.361	0.409	0.621	0.584	0.153	0.834	0.787
D8S1179								
Allele	FBI (N = 203)	CALIFORNIA (N = 200)	FLORIDA (N = 191)	NEW YORK (N = 151)	MICHIGAN (N = 150)	MINNESOTA (N = 149)	ARIZONA (N = 234)	MEXICO (N = 143)
<9	0.0025	0.0125	0.0157	0.0166	0.0000	0.0034	0.0085	0.0070
9	0.0025	0.0050	0.0105	0.0099	0.0067	0.0034	0.0107	0.0000
10	0.0936	0.0975	0.0969	0.0960	0.0967	0.0671	0.0812	0.1259
11	0.0616	0.0450	0.0524	0.0563	0.0767	0.0537	0.0812	0.0734
12	0.1207	0.1175	0.1073	0.1060	0.1467	0.1275	0.1175	0.1119
13	0.3251	0.3300	0.3560	0.3212	0.2800	0.3322	0.3077	0.3252
14	0.2463	0.2250	0.2120	0.1887	0.2567	0.2752	0.2799	0.2238
15	0.1158	0.1375	0.1204	0.1656	0.1133	0.1242	0.0897	0.1084
16	0.0246	0.0275	0.0262	0.0364	0.0167	0.0134	0.0192	0.0245
17	0.0074	0.0025	0.0026	0.0033	0.0067	0.0000	0.0043	0.0000
>17	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Obs. Hom.	18.7%	21.5%	25.7%	21.9%	16.7%	20.8%	17.9%	14.7%
Exp. Hom.	20.6%	20.3%	20.9%	18.9%	19.2%	22.3%	20.7%	19.9%
Hom. Test	0.516	0.666	0.105	0.351	0.439	0.667	0.300	0.117
Exact Test	0.061	0.116	0.030	0.910	0.142	0.252	0.846	0.424

continues



TABLE 3—Continued.

D18S51								
Allele	FBI (N = 203)	CALIFORNIA (N = 199)	FLORIDA (N = 191)	NEW YORK (N = 151)	MICHIGAN (N = 150)	MINNESOTA (N = 149)	ARIZONA (N = 234)	MEXICO (N = 143)
16	0.1158	0.1005	0.1414	0.1159	0.1700	0.1174	0.1068	0.1224
16.2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
17	0.1379	0.1332	0.1073	0.1623	0.1400	0.1409	0.1624	0.1538
18	0.0517	0.0729	0.0550	0.0728	0.0533	0.0738	0.0876	0.0804
19	0.0369	0.0327	0.0471	0.0497	0.0333	0.0403	0.0363	0.0175
20	0.0172	0.0151	0.0288	0.0265	0.0167	0.0336	0.0085	0.0350
20.2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
21	0.0197	0.0151	0.0105	0.0232	0.0100	0.0034	0.0107	0.0070
21.2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
22	0.0074	0.0050	0.0079	0.0066	0.0067	0.0101	0.0128	0.0070
>22	0.0123	0.0101	0.0026	0.0066	0.0067	0.0034	0.0064	0.0035
Obs. Hom.	11.8%	12.6%	10.5%	12.6%	14.0%	11.4%	10.3%	12.6%
Exp. Hom.	12.3%	12.8%	12.2%	12.1%	13.1%	12.4%	12.4%	12.3%
Hom. Test	0.826	0.935	0.470	0.870	0.731	0.717	0.325	0.903
Exact Test	0.512	0.977	0.827	0.308	0.377	0.957	0.181	0.342
D5S818								
Allele	FBI (N = 203)	CALIFORNIA (N = 200)	FLORIDA (N = 240)	NEW YORK (N = 152)	MICHIGAN (N = 150)	MINNESOTA (N = 149)	ARIZONA (N = 234)	MEXICO (N = 143)
<7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0616	0.0700	0.0229	0.0559	0.0300	0.0671	0.0641	0.0769
8	0.0025	0.0175	0.0104	0.0296	0.0033	0.0134	0.0043	0.0035
9	0.0542	0.0300	0.0500	0.0395	0.0367	0.0369	0.0513	0.0455
9.2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	0.0665	0.0600	0.0458	0.0493	0.0467	0.0302	0.0684	0.0629
11	0.4212	0.4025	0.3938	0.3125	0.4167	0.3960	0.3889	0.3881
12	0.2906	0.3175	0.3167	0.3355	0.3300	0.2987	0.2991	0.2937
13	0.0961	0.0950	0.1542	0.1678	0.1300	0.1510	0.1132	0.1154
14	0.0049	0.0075	0.0063	0.0099	0.0033	0.0067	0.0107	0.0105
15	0.0025	0.0000	0.0000	0.0000	0.0033	0.0000	0.0000	0.0035
>15	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Obs. Hom.	28.6%	26.0%	30.4%	20.4%	25.3%	26.2%	28.6%	31.5%
Exp. Hom.	28.1%	28.0%	28.3%	24.4%	30.2%	27.3%	26.4%	26.0%
Hom. Test	0.869	0.533	0.464	0.250	0.198	0.750	0.428	0.134
Exact Test	0.522	0.125	0.246	0.043	0.346	0.496	0.566	0.126
D13S317								
Allele	FBI (N = 203)	CALIFORNIA (N = 200)	FLORIDA (N = 240)	NEW YORK (N = 152)	MICHIGAN (N = 150)	MINNESOTA (N = 149)	ARIZONA (N = 234)	MEXICO (N = 143)
<8	0.0000	0.0000	0.0000	0.0000	0.0033	0.0000	0.0000	0.0000
8	0.0665	0.0725	0.1146	0.0921	0.1433	0.1208	0.1090	0.0909
8.1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	0.2192	0.2175	0.1146	0.1118	0.1200	0.1946	0.1346	0.2308
10	0.1010	0.1000	0.0771	0.0658	0.0833	0.0638	0.0983	0.0699
11	0.2020	0.2025	0.3063	0.2401	0.2267	0.2617	0.2350	0.1958
12	0.2167	0.2350	0.2292	0.3059	0.2500	0.2282	0.2393	0.2517
13	0.1379	0.1300	0.1083	0.1414	0.1200	0.0839	0.1261	0.1224
13.3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
14	0.0567	0.0425	0.0500	0.0428	0.0500	0.0470	0.0556	0.0385

continues

TABLE 3—Continued.

D13S317								
Allele	FBI (N = 203)	CALIFORNIA (N = 200)	FLORIDA (N = 240)	NEW YORK (N = 152)	MICHIGAN (N = 150)	MINNESOTA (N = 149)	ARIZONA (N = 234)	MEXICO (N = 143)
15	0.0000	0.0000	0.0000	0.0000	0.0033	0.0000	0.0021	0.0000
>15	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Obs. Hom.	17.7%	14.5%	23.3%	20.4%	12.7%	18.8%	17.5%	21.0%
Exp. Hom.	17.1%	17.5%	19.1%	19.6%	17.0%	18.4%	16.9%	18.2%
Hom. Test	0.800	0.258	0.096	0.799	0.158	0.892	0.812	0.384
Exact Test	0.993	0.090	0.142	0.330	0.729	0.161	0.429	0.150
D7S820								
Allele	FBI (N = 209)	CALIFORNIA (N = 200)	FLORIDA (N = 240)	NEW YORK (N = 152)	MICHIGAN (N = 150)	MINNESOTA (N = 149)	ARIZONA (N = 234)	MEXICO (N = 143)
6	0.0024	0.0000	0.0021	0.0000	0.0000	0.0000	0.0000	0.0000
6.3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0215	0.0250	0.0104	0.0099	0.0100	0.0134	0.0171	0.0140
8	0.0981	0.1125	0.1417	0.1447	0.1400	0.1174	0.1132	0.0839
8.1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8.2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	0.0478	0.0875	0.1250	0.0987	0.1300	0.0772	0.0641	0.0874
9.1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0021	0.0035
9.3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0064	0.0000
10	0.3062	0.2575	0.2667	0.2730	0.2533	0.2517	0.2692	0.2902
10.1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10.3	0.0000	0.0025	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
11	0.2895	0.3000	0.2271	0.2632	0.2367	0.2953	0.3098	0.2797
11.3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	0.1914	0.1975	0.1875	0.1743	0.1833	0.2081	0.1795	0.1993
13	0.0383	0.0150	0.0354	0.0329	0.0400	0.0336	0.0321	0.0385
14	0.0048	0.0025	0.0042	0.0033	0.0067	0.0034	0.0064	0.0035
>14	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Obs. Hom.	23.9%	26.5%	19.6%	23.0%	18.0%	20.1%	20.1%	18.9%
Exp. Hom.	22.6%	21.5%	19.3%	20.3%	18.9%	21.2%	21.7%	21.6%
Hom. Test	0.653	0.082	0.919	0.412	0.770	0.745	0.540	0.432
Exact Test	0.422	0.886	0.676	0.864	0.464	0.887	0.101	0.966

TABLE 3—Continued.

CSF1PO								
Allele	FBI (N = 209)	CALIFORNIA (N = 200)	FLORIDA (N = 240)	NEW YORK (N = 151)	MICHIGAN (N = 150)	MINNESOTA (N = 149)	ARIZONA (N = 234)	MEXICO (N = 143)
<6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0024	0.0075	0.0021	0.0199	0.0000	0.0067	0.0021	0.0035
8	0.0000	0.0050	0.0042	0.0132	0.0067	0.0034	0.0064	0.0035
9	0.0072	0.0125	0.0125	0.0066	0.0233	0.0067	0.0107	0.0070
10	0.2536	0.2625	0.2542	0.2815	0.2767	0.2148	0.2265	0.2413
10.3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
11	0.2656	0.2675	0.2958	0.2881	0.2833	0.2919	0.3013	0.2867
11.1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	0.3923	0.3775	0.3563	0.3212	0.3467	0.4195	0.3632	0.3986
12.1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
13	0.0646	0.0575	0.0688	0.0497	0.0500	0.0537	0.0791	0.0420
14	0.0096	0.0100	0.0042	0.0199	0.0067	0.0034	0.0107	0.0175
15	0.0048	0.0000	0.0021	0.0000	0.0067	0.0000	0.0000	0.0000
Obs. Hom.	30.6%	32.0%	32.1%	24.5%	28.7%	29.5%	26.1%	28.7%
Exp. Hom.	29.1%	28.5%	28.2%	26.6%	27.8%	30.8%	27.9%	29.9%
Hom. Test	0.637	0.270	0.187	0.552	0.808	0.737	0.532	0.749
Exact Test	0.205	0.369	0.684	0.825	0.014	0.895	0.780	0.424
TPOX								
Allele	FBI (N = 209)	CALIFORNIA (N = 200)	FLORIDA (N = 240)	NEW YORK (N = 151)	MICHIGAN (N = 150)	MINNESOTA (N = 149)	ARIZONA (N = 234)	MEXICO (N = 143)
<6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0048	0.0050	0.0042	0.0166	0.0000	0.0067	0.0000	0.0035
7	0.0048	0.0025	0.0021	0.0000	0.0133	0.0000	0.0021	0.0000
8	0.5550	0.4775	0.5063	0.4437	0.5033	0.4362	0.4936	0.4930
9	0.0335	0.0975	0.0833	0.1126	0.0933	0.1074	0.0983	0.0874
10	0.0335	0.0375	0.0625	0.0596	0.0800	0.0638	0.0363	0.0280
11	0.2727	0.2600	0.2771	0.3013	0.2400	0.2819	0.2479	0.3112
12	0.0933	0.1125	0.0646	0.0629	0.0700	0.1040	0.1175	0.0734
13	0.0024	0.0075	0.0000	0.0033	0.0000	0.0000	0.0043	0.0035
>13	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Obs. Hom.	42.1%	29.0%	39.2%	30.5%	34.0%	26.8%	33.8%	31.5%
Exp. Hom.	39.2%	31.8%	34.7%	30.6%	32.9%	29.4%	32.8%	35.1%
Hom. Test	0.389	0.403	0.144	0.974	0.772	0.496	0.765	0.357
Exact Test	0.415	0.591	0.073	0.943	0.943	0.561	0.055	0.743

*continues*

TABLE 3—Continued.

TH01								
Allele	FBI (N = 209)	CALIFORNIA (N = 200)	FLORIDA (N = 240)	NEW YORK (N = 151)	MICHIGAN (N = 150)	MINNESOTA (N = 149)	ARIZONA (N = 234)	MEXICO (N = 143)
<5	0.0000	0.0000	0.0000	0.0033	0.0000	0.0000	0.0000	0.0000
5	0.0024	0.0000	0.0000	0.0000	0.0000	0.0000	0.0021	0.0000
6	0.2321	0.2625	0.2125	0.2384	0.2567	0.2215	0.2094	0.2867
7	0.3373	0.3475	0.2521	0.2219	0.2500	0.3356	0.3248	0.3077
8	0.0813	0.1000	0.1042	0.1358	0.1133	0.0973	0.0812	0.1049
8.3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	0.1029	0.1125	0.1854	0.1656	0.1233	0.1510	0.1303	0.0944
9.3	0.2416	0.1700	0.2354	0.2318	0.2433	0.1846	0.2436	0.1923
10	0.0024	0.0075	0.0104	0.0033	0.0133	0.0101	0.0064	0.0140
>10	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0021	0.0000
Obs. Hom.	22.5%	27.0%	20.0%	16.6%	28.0%	16.8%	16.7%	21.7%
Exp. Hom.	24.1%	23.9%	20.8%	20.3%	21.3%	22.5%	23.1%	23.1%
Hom. Test	0.576	0.310	0.766	0.253	0.046	0.092	0.020	0.681
Exact Test	0.910	0.743	0.390	0.381	0.379	0.417	0.441	0.159
D16S539								
Allele	FBI (N = 208)	CALIFORNIA (N = 200)	FLORIDA (N = 240)	NEW YORK (N = 151)	MICHIGAN (N = 150)	MINNESOTA (NA)	ARIZONA (N = 234)	MEXICO (N = 143)
<8	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000
8	0.0168	0.0125	0.0229	0.0331	0.0067		0.0256	0.0035
9	0.0793	0.1025	0.1458	0.1887	0.1300		0.1111	0.0979
10	0.1731	0.2175	0.0958	0.1225	0.1000		0.1368	0.1958
11	0.3149	0.2600	0.2813	0.2550	0.2367		0.2329	0.3182
11.3	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000
12	0.2861	0.2600	0.2542	0.2219	0.3433		0.3397	0.2692
13	0.1034	0.1250	0.1625	0.1490	0.1600		0.1239	0.0979
14	0.0240	0.0225	0.0354	0.0298	0.0233		0.0278	0.0175
15	0.0024	0.0000	0.0021	0.0000	0.0000		0.0021	0.0000
Obs. Hom.	22.6%	20.5%	20.0%	21.9%	24.0%		20.5%	20.3%
Exp. Hom.	22.7%	20.7%	20.1%	18.6%	22.4%		21.6%	22.9%
Hom. Test	0.973	0.936	0.979	0.310	0.647		0.691	0.458
Exact Test	0.506	0.484	0.680	0.487	0.954		0.709	0.081

a) FBI data previously published (4).

TABLE 4—Observed allele frequency distributions in six Asian sample populations.

D3S1358						
	CHINESE	JAPANESE1	JAPANESE2	KOREAN	VIETNAMESE	GENERAL ASIAN
Allele	(N = 111)	(N = 125)	(N = 153)	(N = 103)	(N = 213)	(N = 196)
<12	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	0.0000	0.0000	0.0000	0.0097	0.0000	0.0000
13	0.0000	0.0040	0.0000	0.0049	0.0047	0.0026
14	0.0495	0.0200	0.0261	0.0631	0.0305	0.0459
15	0.3784	0.4040	0.4085	0.4320	0.3005	0.3214
15.2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
16	0.2883	0.3160	0.2908	0.2767	0.3427	0.3163
17	0.2252	0.1840	0.2157	0.1650	0.2488	0.2474
17.1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18	0.0541	0.0680	0.0556	0.0485	0.0587	0.0638
19	0.0045	0.0040	0.0033	0.0000	0.0141	0.0026
>19	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Obs. Hom.	27.0%	34.4%	28.8%	27.2%	27.7%	27.6%
Exp. Hom.	27.9%	29.9%	29.9%	29.3%	27.3%	26.9%
Hom. Test	0.835	0.274	0.748	0.630	0.884	0.836
Exact Test	0.155	0.482	0.805	0.964	0.937	0.114
vWA						
	CHINESE	JAPANESE1	JAPANESE2	KOREAN	VIETNAMESE	GENERAL ASIAN
Allele	(N = 111)	(N = 125)	(N = 157)	(N = 103)	(N = 215)	(N = 196)
11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
13	0.0000	0.0000	0.0000	0.0000	0.0023	0.0000
14	0.2477	0.1480	0.2006	0.1942	0.2698	0.1888
15	0.0225	0.0360	0.0191	0.0631	0.0186	0.0663
16	0.2027	0.1600	0.1752	0.1990	0.1488	0.1709
17	0.2387	0.3120	0.2643	0.2670	0.2279	0.2857
18	0.1757	0.2320	0.2357	0.1990	0.2395	0.1990
19	0.0991	0.0800	0.0796	0.0728	0.0791	0.0714
20	0.0135	0.0320	0.0255	0.0049	0.0140	0.0179
21	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
>21	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Obs. Hom.	21.6%	22.4%	18.5%	15.5%	20.5%	16.8%
Exp. Hom.	19.7%	20.4%	20.1%	19.4%	20.9%	19.4%
Hom. Test	0.615	0.583	0.607	0.326	0.870	0.367
Exact Test	0.556	0.358	0.234	0.189	0.855	0.587

*continues*

TABLE 4—Continued.

FGA	CHINESE (N = 111)	JAPANESE1 (N = 125)	JAPANESE2 (N = 153)	KOREAN (N = 103)	VIETNAMESE (N = 208)	GENERAL ASIAN (N = 196)
Allele						
<18	0.0090	0.0040	0.0098	0.0000	0.0072	0.0077
18	0.0315	0.0240	0.0261	0.0146	0.0192	0.0026
18.2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19	0.0450	0.0560	0.0588	0.0534	0.0914	0.0638
19.2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19.3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	0.0631	0.0760	0.0948	0.0680	0.0577	0.0842
20.2	0.0000	0.0000	0.0000	0.0000	0.0024	0.0026
21	0.1261	0.1360	0.0980	0.0680	0.1587	0.1582
21.2	0.0045	0.0040	0.0000	0.0000	0.0144	0.0051
22	0.1532	0.2120	0.2157	0.2282	0.1971	0.1862
22.2	0.0000	0.0040	0.0000	0.0000	0.0096	0.0102
22.3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
23	0.2252	0.1640	0.2288	0.2233	0.1298	0.1684
23.2	0.0090	0.0000	0.0000	0.0049	0.0192	0.0051
23.3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
24	0.1712	0.1680	0.1536	0.2184	0.1490	0.1454
24.2	0.0045	0.0000	0.0000	0.0049	0.0120	0.0051
24.3	0.0045	0.0000	0.0000	0.0000	0.0000	0.0000
25	0.1036	0.1000	0.0719	0.0825	0.0673	0.0765
25.1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
25.2	0.0090	0.0040	0.0000	0.0000	0.0096	0.0000
25.3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
26	0.0315	0.0440	0.0359	0.0194	0.0361	0.0485
26.2	0.0090	0.0000	0.0000	0.0000	0.0048	0.0077
27	0.0000	0.0040	0.0065	0.0146	0.0144	0.0153
27.2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
28	0.0000	0.0000	0.0000	0.0000	0.0000	0.0077
29	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
30	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
>30	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Obs. Hom.	15.3%	15.2%	14.4%	16.5%	12.0%	10.2%
Exp. Hom.	13.5%	13.7%	14.9%	16.5%	12.0%	12.7%
Hom. Test	0.566	0.616	0.856	0.994	0.995	0.296
Exact Test	0.054	0.135	0.905	0.559	0.374	0.035

TABLE 4—Continued.

D8S1179						
	CHINESE	JAPANESE1	JAPANESE2	KOREAN	VIETNAMESE	GENERAL ASIAN
Allele	(N = 111)	(N = 125)	(N = 153)	(N = 103)	(N = 215)	(N = 196)
<9	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	0.0000	0.0040	0.0033	0.0000	0.0000	0.0000
10	0.0766	0.1400	0.1275	0.1117	0.1628	0.1429
11	0.1081	0.1200	0.0980	0.1165	0.1302	0.0944
12	0.1622	0.1040	0.1046	0.1650	0.1023	0.1020
13	0.1712	0.1880	0.2451	0.2233	0.1558	0.2194
14	0.1982	0.2120	0.2157	0.1893	0.1419	0.2015
15	0.1847	0.1600	0.1340	0.1165	0.1698	0.1582
16	0.0766	0.0680	0.0588	0.0777	0.1140	0.0765
17	0.0135	0.0040	0.0098	0.0000	0.0163	0.0051
>17	0.0090	0.0000	0.0033	0.0000	0.0070	0.0000
Obs. Hom.	16.2%	14.4%	19.0%	20.4%	17.7%	23.5%
Exp. Hom.	14.9%	15.2%	16.2%	15.4%	13.9%	15.7%
Hom. Test	0.692	0.804	0.358	0.165	0.104	0.003
Exact Test	0.731	0.840	0.070	0.081	0.347	0.062
D21S11						
	CHINESE	JAPANESE1	JAPANESE2	KOREAN	VIETNAMESE	GENERAL ASIAN
Allele	(N = 111)	(N = 125)	(N = 153)	(N = 103)	(N = 215)	(N = 196)
<24.2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
24.2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
24.3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
25	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
25.2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
26	0.0000	0.0000	0.0000	0.0000	0.0000	0.0026
26.2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
27	0.0000	0.0000	0.0000	0.0194	0.0047	0.0102
28	0.0495	0.0560	0.0359	0.0680	0.0535	0.0969
28.2	0.0045	0.0040	0.0065	0.0049	0.0000	0.0000
29	0.2703	0.2480	0.2353	0.2282	0.2326	0.2474
29.2	0.0000	0.0000	0.0000	0.0097	0.0000	0.0026
29.3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
30	0.2703	0.3120	0.3922	0.3398	0.2674	0.2015
30.2	0.0090	0.0040	0.0033	0.0243	0.0140	0.0281
30.3	0.0135	0.0000	0.0000	0.0000	0.0023	0.0000
31	0.0495	0.1000	0.0948	0.0971	0.0791	0.1071
31.1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
31.2	0.0991	0.0800	0.0523	0.0243	0.0814	0.0536
32	0.0405	0.0200	0.0196	0.0340	0.0326	0.0408
32.1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

*continues*

TABLE 4—Continued.

D21S11						
Allele	CHINESE (N = 111)	JAPANESE1 (N = 125)	JAPANESE2 (N = 153)	KOREAN (N = 103)	VIETNAMESE (N = 215)	GENERAL ASIAN (N = 196)
<24.2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
32.2	0.1396	0.1360	0.1209	0.1214	0.1651	0.1224
32.3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0051
33	0.0000	0.0000	0.0033	0.0049	0.0070	0.0051
33.1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
33.2	0.0541	0.0360	0.0327	0.0243	0.0535	0.0561
33.3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
34	0.0000	0.0000	0.0033	0.0000	0.0000	0.0026
34.1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
34.2	0.0000	0.0040	0.0000	0.0000	0.0070	0.0077
35	0.0000	0.0000	0.0000	0.0000	0.0000	0.0026
35.2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0026
36	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
>36	0.0000	0.0000	0.0000	0.0000	0.0000	0.0051
Obs. Hom.	20.7%	13.6%	24.2%	19.4%	19.1%	18.9%
Exp. Hom.	18.1%	19.5%	23.6%	19.6%	17.1%	14.4%
Hom. Test	0.482	0.094	0.861	0.966	0.441	0.076
Exact Test	0.658	0.444	0.822	0.690	0.087	0.106
D18S51						
Allele	CHINESE (N = 111)	JAPANESE1 (N = 125)	JAPANESE2 (N = 153)	KOREAN (N = 103)	VIETNAMESE (N = 215)	GENERAL ASIAN (N = 196)
<11	0.0090	0.0040	0.0033	0.0000	0.0023	0.0128
11	0.0000	0.0040	0.0098	0.0097	0.0070	0.0026
12	0.0180	0.0440	0.0458	0.0583	0.0372	0.0893
13	0.1577	0.1760	0.1961	0.2087	0.1140	0.1378
13.2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
14	0.2297	0.2480	0.1699	0.1990	0.1698	0.1862
14.2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
15	0.1802	0.1560	0.1765	0.1990	0.2744	0.2041
15.2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
16	0.1081	0.1400	0.1536	0.1068	0.1651	0.1301
16.2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
17	0.1036	0.0960	0.0784	0.0583	0.1047	0.0587
18	0.0405	0.0560	0.0621	0.0485	0.0302	0.0459
19	0.0450	0.0200	0.0261	0.0485	0.0349	0.0714
20	0.0405	0.0360	0.0294	0.0388	0.0209	0.0179
20.2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
21	0.0315	0.0040	0.0163	0.0097	0.0140	0.0102
21.2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
22	0.0180	0.0080	0.0196	0.0097	0.0163	0.0128
>22	0.0180	0.0080	0.0131	0.0049	0.0093	0.0204
Obs. Hom.	12.6%	14.4%	14.4%	14.6%	20.0%	7.7%
Exp. Hom.	13.6%	14.9%	13.4%	14.3%	15.8%	13.0%
Hom. Test	0.766	0.872	0.714	0.948	0.090	0.026
Exact Test	0.331	0.579	0.808	0.645	0.097	0.365

TABLE 4—Continued.

D5S818						
	CHINESE	JAPANESE1	JAPANESE2	KOREAN	VIETNAMESE	GENERAL ASIAN
Allele	(N = 196)	(N = 149)	(N = 111)	(N = 125)	(N = 210)	(N = 103)
<7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0270	0.0000	0.0032	0.0243	0.0286	0.0255
8	0.0000	0.0000	0.0064	0.0049	0.0024	0.0000
9	0.0946	0.0960	0.1178	0.0971	0.0619	0.0587
9.2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	0.1532	0.1800	0.1879	0.1456	0.2286	0.1862
11	0.3468	0.3280	0.3057	0.3592	0.3024	0.3342
12	0.2477	0.1920	0.1911	0.2816	0.2310	0.2526
13	0.1081	0.1920	0.1783	0.0874	0.1357	0.1250
14	0.0135	0.0040	0.0096	0.0000	0.0048	0.0128
15	0.0090	0.0080	0.0000	0.0000	0.0048	0.0051
>15	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Obs. Hom.	27.9%	23.2%	20.4%	28.2%	19.5%	23.0%
Exp. Hom.	22.3%	22.0%	20.9%	24.4%	21.8%	22.8%
Hom. Test	0.156	0.744	0.883	0.369	0.027	0.960
Exact Test	0.660	0.178	0.328	0.538	0.098	0.913
D13S317						
	CHINESE	JAPANESE1	JAPANESE2	KOREAN	VIETNAMESE	GENERAL ASIAN
Allele	(N = 111)	(N = 125)	(N = 157)	(N = 103)	(N = 209)	(N = 196)
<8	0.0045	0.0000	0.0064	0.0000	0.0000	0.0000
8	0.2342	0.2360	0.2293	0.2184	0.3636	0.2781
8.1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	0.1622	0.1160	0.1561	0.1408	0.1148	0.0816
10	0.1577	0.1040	0.0987	0.1311	0.1148	0.1071
11	0.2477	0.2720	0.2134	0.2573	0.2010	0.2832
12	0.1396	0.2160	0.2516	0.1796	0.1675	0.1582
13	0.0450	0.0560	0.0350	0.0534	0.0215	0.0740
13.3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
14	0.0090	0.0000	0.0096	0.0194	0.0096	0.0179
15	0.0000	0.0000	0.0000	0.0000	0.0072	0.0000
>15	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Obs. Hom.	15.3%	16.8%	19.1%	13.6%	26.8%	29.1%
Exp. Hom.	18.5%	20.1%	19.4%	18.2%	22.6%	20.4%
Hom. Test	0.383	0.363	0.919	0.222	0.145	0.003
Exact Test	0.795	0.599	0.453	0.870	0.961	0.475

*continues*

TABLE 4—Continued.

D7S820						
	CHINESE	JAPANESE1	JAPANESE2	KOREAN	VIETNAMESE	GENERAL ASIAN
Allele	(N = 111)	(N = 125)	(N = 157)	(N = 103)	(N = 207)	(N = 196)
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6.3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0045	0.0000	0.0000	0.0000	0.0024	0.0102
8	0.1126	0.1200	0.1146	0.1311	0.1546	0.1684
8.1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8.2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	0.0541	0.0480	0.0382	0.0825	0.0725	0.0816
9.1	0.0045	0.0000	0.0000	0.0000	0.0000	0.0000
9.3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	0.1532	0.2520	0.2580	0.1893	0.1522	0.2168
10.1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10.3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
11	0.3378	0.3600	0.3185	0.3350	0.3913	0.3138
11.3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	0.2658	0.1760	0.2166	0.2184	0.1981	0.1760
13	0.0676	0.0360	0.0478	0.0388	0.0242	0.0255
14	0.0000	0.0080	0.0064	0.0049	0.0048	0.0077
>14	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Obs. Hom.	16.2%	28.8%	26.1%	20.4%	26.1%	23.0%
Exp. Hom.	22.5%	23.9%	22.9%	21.7%	24.3%	21.0%
Hom. Test	0.113	0.200	0.343	0.738	0.559	0.507
Exact Test	0.606	0.930	0.532	0.484	0.034	0.351
CSF1PO						
	CHINESE	JAPANESE1	JAPANESE2	KOREAN	VIETNAMESE	GENERAL ASIAN
Allele	(N = 111)	(N = 125)	(N = 157)	(N = 103)	(N = 210)	(N = 196)
<6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0045	0.0040	0.0191	0.0000	0.0024	0.0026
8	0.0000	0.0000	0.0032	0.0000	0.0000	0.0051
9	0.0541	0.0440	0.0605	0.0388	0.0333	0.0306
10	0.2162	0.2200	0.1911	0.2184	0.2214	0.2321
10.3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
11	0.2748	0.2280	0.2166	0.2427	0.2786	0.2679
11.1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	0.3649	0.4000	0.4204	0.3981	0.3905	0.3852
12.1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
13	0.0811	0.0800	0.0541	0.0825	0.0595	0.0638
14	0.0045	0.0240	0.0287	0.0146	0.0095	0.0128
15	0.0000	0.0000	0.0064	0.0049	0.0048	0.0000
Obs. Hom.	21.6%	32.8%	31.8%	31.1%	24.3%	32.7%
Exp. Hom.	26.2%	26.6%	26.6%	27.0%	28.2%	27.7%
Hom. Test	0.277	0.119	0.134	0.354	0.206	0.124
Exact Test	0.733	0.196	0.383	0.960	0.734	0.075

TABLE 4—Continued.

TPOX						
	CHINESE	JAPANESE1	JAPANESE2	KOREAN	VIETNAMESE	GENERAL ASIAN
Allele	(N = 111)	(N = 125)	(N = 157)	(N = 103)	(N = 210)	(N = 196)
<6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0049	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0048	0.0026
8	0.5315	0.4240	0.3949	0.5049	0.5619	0.4949
9	0.1261	0.1840	0.1210	0.1214	0.0952	0.1097
10	0.0405	0.0360	0.0414	0.0388	0.0619	0.0408
11	0.2748	0.3240	0.4076	0.3058	0.2548	0.3112
12	0.0270	0.0320	0.0350	0.0194	0.0214	0.0408
13	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
>13	0.0000	0.0000	0.0000	0.0049	0.0000	0.0000
Obs. Hom.	36.0%	34.4%	33.1%	38.8%	38.1%	34.7%
Exp. Hom.	37.3%	31.8%	33.8%	36.2%	39.3%	35.6%
Hom. Test	0.775	0.536	0.866	0.577	0.730	0.802
Exact Test	0.420	0.643	0.935	0.289	0.394	0.226
TH01						
	CHINESE	JAPANESE1	JAPANESE2	KOREAN	VIETNAMESE	GENERAL ASIAN
Allele	(N = 111)	(N = 125)	(N = 157)	(N = 103)	(N = 210)	(N = 196)
<5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0901	0.1920	0.2261	0.1456	0.1071	0.1735
7	0.2928	0.3160	0.2771	0.2621	0.2810	0.2449
8	0.0631	0.0720	0.0573	0.0388	0.0500	0.0867
8.3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	0.4640	0.3480	0.3822	0.4612	0.4405	0.3673
9.3	0.0450	0.0560	0.0446	0.0728	0.0524	0.0816
10	0.0450	0.0160	0.0127	0.0194	0.0667	0.0459
>10	0.0000	0.0000	0.0000	0.0000	0.0024	0.0000
Obs. Hom.	29.7%	26.4%	33.1%	29.1%	32.9%	28.6%
Exp. Hom.	31.4%	26.3%	27.7%	30.6%	29.2%	23.9%
Hom. Test	0.704	0.989	0.130	0.739	0.250	0.128
Exact Test	0.520	0.109	0.396	0.373	0.484	0.455

*continues*

TABLE 4—Continued.

D16S539						
Allele	(N = 111)	(N = 125)	(N = 157)	(N = 103)	(N = 210)	GENERAL ASIAN (N = 196)
<8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0064	0.0097	0.0071	0.0026
9	0.2703	0.2720	0.2930	0.2961	0.2214	0.2194
10	0.1081	0.2040	0.1624	0.1456	0.1643	0.1301
11	0.3063	0.2400	0.2643	0.2427	0.2619	0.2934
11.3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	0.2387	0.1920	0.1943	0.2136	0.2357	0.2321
13	0.0405	0.0760	0.0732	0.0728	0.0952	0.1020
14	0.0360	0.0080	0.0064	0.0194	0.0143	0.0204
15	0.0000	0.0080	0.0000	0.0000	0.0000	0.0000
Obs. Hom.	22.5%	23.2%	19.1%	24.3%	17.1%	13.3%
Exp. Hom.	23.5%	21.3%	22.3%	21.5%	20.8%	21.4%
Hom. Test	0.807	0.600	0.339	0.500	0.196	0.006
Exact Test	0.806	0.876	0.782	0.467	0.789	0.241

TABLE 5—Observed allele frequencies for seven Native American populations.

D3S1358							
	MICHIGAN	MINNESOTA	APACHE	NAVAJO	NORTHERN ONTARIO	SALISHAN	SASKATCHEWAN
Allele	(N = 58)	(N = 200)	(N = 198)	(N = 182)	(N = 125)	(N = 93)	(N = 79)
<12	0.0000	0.0025	0.0000	0.0000	0.0000	0.0000	0.0000
12	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
13	0.0086	0.0000	0.0025	0.0137	0.0040	0.0000	0.0000
14	0.1466	0.0625	0.0606	0.0330	0.0840	0.0538	0.0380
15	0.2759	0.4275	0.6843	0.7390	0.3880	0.5108	0.3987
15.2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
16	0.2328	0.3225	0.1793	0.1374	0.4720	0.3065	0.4620
17	0.2069	0.0950	0.0480	0.0659	0.0160	0.0968	0.0633
17.1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18	0.1293	0.0825	0.0253	0.0082	0.0360	0.0323	0.0316
19	0.0000	0.0075	0.0000	0.0027	0.0000	0.0000	0.0063
>19	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Obs. Hom.	22.4%	28.5%	46.5%	60.4%	38.4%	35.5%	35.4%
Exp. Hom.	20.4%	30.5%	50.6%	57.0%	37.9%	36.5%	37.5%
Hom. Test	0.711	0.542	0.246	0.342	0.917	0.844	0.706
Exact Test	0.994	0.162	0.287	0.236	0.293	0.008	0.159
vWA							
	MICHIGAN	MINNESOTA	APACHE	NAVAJO	NORTHERN ONTARIO	SALISHAN	SASKATCHEWAN
Allele	(N = 58)	(N = 200)	(N = 198)	(N = 182)	(N = 125)	(N = 93)	(N = 79)
11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	0.0000	0.0025	0.0000	0.0000	0.0000	0.0000	0.0000
13	0.0086	0.0025	0.0000	0.0000	0.0000	0.0000	0.0000
14	0.1293	0.0450	0.0404	0.0247	0.1120	0.1613	0.0759
15	0.1379	0.0700	0.0202	0.0192	0.0080	0.0806	0.0506
16	0.2586	0.3250	0.5025	0.4286	0.4400	0.2957	0.3797
17	0.2069	0.3275	0.2121	0.3132	0.3040	0.2419	0.2911
18	0.1293	0.1600	0.1389	0.1566	0.0840	0.0968	0.1266
19	0.1121	0.0525	0.0631	0.0549	0.0480	0.1237	0.0696
20	0.0172	0.0125	0.0227	0.0027	0.0040	0.0000	0.0063
21	0.0000	0.0025	0.0000	0.0000	0.0000	0.0000	0.0000
>21	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Obs. Hom.	15.5%	26.0%	36.9%	30.8%	31.2%	20.4%	26.6%
Exp. Hom.	16.8%	24.6%	32.2%	30.8%	30.5%	19.9%	25.3%
Hom. Test	0.795	0.657	0.156	0.984	0.869	0.895	0.801
Exact Test	0.766	0.793	0.063	0.276	0.698	0.658	0.203
FGA							
	MICHIGAN	MINNESOTA	APACHE	NAVAJO	NORTHERN ONTARIO	SALISHAN	SASKATCHEWAN
Allele	(N = 58)	(N = 200)	(N = 198)	(N = 182)	(N = 125)	(N = 93)	(N = 79)
<18	0.0000	0.0000	0.0000	0.0000	0.0120	0.0215	0.0000
18	0.0172	0.0100	0.0025	0.0137	0.0080	0.0054	0.0000

continues

TABLE 5—Continued.

Allele	(N = 58)	(N = 200)	(N = 198)	(N = 182)	(N = 125)	(N = 93)	(N = 79)
18.2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19	0.0690	0.0975	0.2045	0.1868	0.0880	0.2151	0.1329
19.2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19.3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	0.1293	0.1300	0.1162	0.0907	0.0520	0.0860	0.0696
20.2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
21	0.1983	0.1275	0.0783	0.1264	0.1040	0.0914	0.1203
21.2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0108	0.0000
22	0.2414	0.1075	0.0530	0.0852	0.0920	0.0376	0.1013
22.2	0.0000	0.0025	0.0000	0.0000	0.0000	0.0000	0.0000
22.3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
23	0.1638	0.1575	0.0505	0.0522	0.2120	0.1290	0.2152
23.2	0.0000	0.0025	0.0000	0.0000	0.0000	0.0000	0.0000
23.3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
24	0.1121	0.1600	0.1540	0.1126	0.1680	0.1505	0.1962
24.2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0063
24.3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
25	0.0517	0.1350	0.2298	0.1676	0.1320	0.1505	0.0759
25.1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
25.2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
25.3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
26	0.0000	0.0525	0.0909	0.1126	0.0680	0.0699	0.0443
26.2	0.0000	0.0050	0.0000	0.0000	0.0400	0.0000	0.0127
27	0.0086	0.0075	0.0152	0.0467	0.0040	0.0323	0.0253
27.2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
28	0.0086	0.0050	0.0051	0.0055	0.0200	0.0000	0.0000
29	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
30	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
>30	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Obs. Hom.	24.1%	15.5%	15.7%	19.8%	15.2%	11.8%	17.7%
Exp. Hom.	15.4%	12.4%	15.0%	12.3%	12.4%	12.7%	13.5%
Hom. Test	0.066	0.178	0.788	0.002	0.336	0.796	0.274
Exact Test	0.269	0.769	0.954	0.001	0.248	0.049	0.378
D8S1179							
	MICHIGAN	MINNESOTA	APACHE	NAVAJO	NORTHERN ONTARIO	SALISHAN	SASKATCHEWAN
Allele	(N = 58)	(N = 200)	(N = 198)	(N = 185)	(N = 125)	(N = 93)	(N = 79)
<9	0.0345	0.0050	0.0000	0.0000	0.0000	0.0000	0.0063
9	0.0086	0.0025	0.0051	0.0000	0.0000	0.0000	0.0000
10	0.0948	0.0475	0.1389	0.1486	0.0680	0.0430	0.0190
11	0.0690	0.0325	0.0455	0.0514	0.0000	0.0376	0.0190
12	0.1724	0.1125	0.0606	0.1081	0.0400	0.1398	0.1203
13	0.3017	0.3700	0.2879	0.3703	0.3960	0.3118	0.4114
14	0.1638	0.3075	0.3460	0.2216	0.3760	0.3710	0.3101
15	0.1034	0.0975	0.1136	0.0838	0.1120	0.0699	0.1013
16	0.0431	0.0200	0.0025	0.0162	0.0080	0.0215	0.0127

TABLE 5—Continued.

D8S1179	MICHIGAN	MINNESOTA	APACHE	NAVAJO	NORTHERN ONTARIO	SALISHAN	SASKATCHEWAN
Allele	(N = 58)	(N = 200)	(N = 198)	(N = 185)	(N = 125)	(N = 93)	(N = 79)
17	0.0000	0.0050	0.0000	0.0000	0.0000	0.0054	0.0000
>17	0.0086	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Obs. Hom.	17.2%	32.0%	22.7%	25.4%	31.2%	24.7%	22.8%
Exp. Hom.	16.8%	25.6%	23.9%	22.8%	31.4%	25.9%	28.7%
Hom. Test	0.929	0.037	0.708	0.395	0.956	0.796	0.249
Exact Test	0.414	0.086	0.255	0.695	0.529	0.262	0.633
D21S11	MICHIGAN	MINNESOTA	APACHE	NAVAJO	NORTHERN ONTARIO	SALISHAN	SASKATCHEWAN
Allele	(N = 58)	(N = 200)	(N = 198)	(N = 185)	(N = 125)	(N = 93)	(N = 79)
<24.2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
24.2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
24.3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
25	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
25.2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
26	0.0086	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
26.2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
27	0.0603	0.0075	0.0051	0.0000	0.0040	0.0000	0.0063
28	0.1466	0.0625	0.0227	0.0541	0.0160	0.0430	0.0570
28.2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
29	0.1379	0.1650	0.1263	0.1784	0.2120	0.1667	0.2405
29.2	0.0000	0.0025	0.0051	0.0000	0.0000	0.0000	0.0000
29.3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
30	0.2328	0.3450	0.5354	0.5081	0.2200	0.2366	0.3418
30.2	0.0690	0.0200	0.0051	0.0000	0.0360	0.0054	0.0127
30.3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
31	0.1293	0.0575	0.0455	0.0486	0.0520	0.0376	0.0633
31.1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
31.2	0.0862	0.1925	0.1843	0.0622	0.1680	0.0806	0.1266
32	0.0086	0.0050	0.0076	0.0000	0.0040	0.0269	0.0063
32.1	0.0000	0.0000	0.0000	0.0000	0.0280	0.0000	0.0000
32.2	0.0776	0.0950	0.0556	0.1189	0.1480	0.2688	0.1076
32.3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
33	0.0000	0.0075	0.0000	0.0000	0.0000	0.0000	0.0000
33.1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
33.2	0.0172	0.0325	0.0076	0.0270	0.0240	0.1290	0.0316
33.3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
34	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
34.1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
34.2	0.0259	0.0075	0.0000	0.0027	0.0880	0.0054	0.0063
35	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
35.2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
36	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

continues

TABLE 5—Continued.

D21S11							
	MICHIGAN	MINNESOTA	APACHE	NAVAJO	NORTHERN ONTARIO	SALISHAN	SASKATCHEWAN
Allele	(N = 58)	(N = 200)	(N = 198)	(N = 185)	(N = 125)	(N = 93)	(N = 79)
>36	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Obs. Hom.	19.0%	19.5%	31.8%	32.4%	15.2%	14.0%	21.5%
Exp. Hom.	12.7%	19.9%	34.1%	31.2%	15.3%	17.9%	20.6%
Hom. Test	0.151	0.882	0.503	0.721	0.963	0.326	0.836
Exact Test	0.452	0.040	0.162	0.862	0.655	0.072	0.553
D18S51							
	MICHIGAN	MINNESOTA	APACHE	NAVAJO	NORTHERN ONTARIO	SALISHAN	SASKATCHEWAN
Allele	(N = 58)	(N = 200)	(N = 198)	(N = 185)	(N = 125)	(N = 93)	(N = 79)
<11	0.0259	0.0075	0.0025	0.0000	0.0000	0.0000	0.0000
11	0.0259	0.0000	0.0076	0.0027	0.0000	0.0161	0.0000
12	0.1466	0.1400	0.1111	0.0946	0.1120	0.0806	0.1203
13	0.0948	0.0950	0.1944	0.3216	0.1160	0.1237	0.1392
13.2	0.0000	0.0000	0.0101	0.0000	0.0000	0.0000	0.0000
14	0.1810	0.2750	0.1692	0.1378	0.3840	0.1237	0.3038
14.2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
15	0.1293	0.1250	0.0732	0.0784	0.1000	0.2097	0.1456
15.2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
16	0.1121	0.1050	0.2525	0.1838	0.1360	0.1398	0.0949
16.2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
17	0.1466	0.1450	0.1086	0.1162	0.0920	0.2312	0.1203
18	0.0862	0.0275	0.0404	0.0189	0.0160	0.0161	0.0127
19	0.0345	0.0375	0.0101	0.0243	0.0280	0.0215	0.0190
20	0.0086	0.0175	0.0101	0.0081	0.0080	0.0269	0.0127
20.2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
21	0.0086	0.0150	0.0076	0.0108	0.0080	0.0000	0.0127
21.2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
22	0.0000	0.0075	0.0025	0.0000	0.0000	0.0054	0.0127
>22	0.0000	0.0025	0.0000	0.0027	0.0000	0.0054	0.0063
Obs. Hom.	6.9%	17.0%	21.7%	20.5%	22.4%	12.9%	16.5%
Exp. Hom.	11.6%	15.3%	16.0%	18.4%	20.8%	15.1%	16.7%
Hom. Test	0.259	0.494	0.027	0.447	0.668	0.550	0.962
Exact Test	0.698	0.086	0.120	0.355	0.770	0.987	0.057
D5S818							
	MICHIGAN	MINNESOTA	APACHE	NAVAJO	NORTHERN ONTARIO	SALISHAN	SASKATCHEWAN
Allele	(N = 58)	(N = 200)	(N = 198)	(N = 182)	(N = 125)	(N = 93)	(N = 79)
<7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0172	0.1650	0.1338	0.1621	0.5320	0.2581	0.3101
8	0.0086	0.0025	0.0101	0.0357	0.0000	0.0000	0.0000

TABLE 5—Continued.

D5S818							
	MICHIGAN	MINNESOTA	APACHE	NAVAJO	NORTHERN ONTARIO	SALISHAN	SASKATCHEWAN
Allele	(N = 58)	(N = 200)	(N = 198)	(N = 182)	(N = 125)	(N = 93)	(N = 79)
9	0.0172	0.0575	0.0177	0.0027	0.0080	0.0000	0.0253
9.2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	0.0431	0.0475	0.1136	0.0604	0.0480	0.1290	0.0380
11	0.4138	0.4025	0.5606	0.5824	0.2520	0.3011	0.3861
12	0.3534	0.2275	0.0732	0.1071	0.1480	0.1828	0.1709
13	0.1379	0.0950	0.0884	0.0495	0.0120	0.1237	0.0633
14	0.0086	0.0025	0.0025	0.0000	0.0000	0.0054	0.0063
15	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
>15	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Obs. Hom.	29.3%	30.5%	32.3%	37.9%	29.6%	9.7%	22.8%
Exp. Hom.	31.2%	25.4%	35.7%	38.3%	36.8%	21.8%	27.6%
Hom. Test	0.758	0.096	0.320	0.922	0.093	0.005	0.339
Exact Test	0.894	0.051	0.633	0.843	0.435	0.087	0.848
D13S317							
	MICHIGAN	MINNESOTA	APACHE	NAVAJO	NORTHERN ONTARIO	SALISHAN	SASKATCHEWAN
Allele	(N = 58)	(N = 200)	(N = 198)	(N = 182)	(N = 125)	(N = 93)	(N = 79)
<8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.1207	0.0500	0.0101	0.0082	0.0120	0.0591	0.0506
8.1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	0.0776	0.1875	0.3081	0.2473	0.3640	0.3387	0.2405
10	0.0690	0.1350	0.0682	0.1511	0.1080	0.1183	0.1519
11	0.2759	0.2425	0.2298	0.2225	0.2320	0.2204	0.2089
12	0.3448	0.2300	0.2273	0.1978	0.1520	0.1075	0.1962
13	0.0862	0.0750	0.1364	0.1593	0.0480	0.0806	0.0886
13.3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0063
14	0.0172	0.0775	0.0202	0.0137	0.0840	0.0753	0.0506
15	0.0086	0.0025	0.0000	0.0000	0.0000	0.0000	0.0063
>15	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Obs. Hom.	25.9%	18.5%	19.7%	19.2%	24.0%	18.3%	24.1%
Exp. Hom.	22.1%	17.7%	22.1%	19.6%	22.8%	20.0%	17.1%
Hom. Test	0.495	0.772	0.412	0.899	0.739	0.674	0.100
Exact Test	0.127	0.716	0.333	0.788	0.478	0.161	0.018
D7S820							
	MICHIGAN	MINNESOTA	APACHE	NAVAJO	NORTHERN ONTARIO	SALISHAN	SASKATCHEWAN
Allele	(N = 58)	(N = 200)	(N = 198)	(N = 182)	(N = 125)	(N = 93)	(N = 79)
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6.3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0050	0.0076	0.0027	0.0000	0.0000	0.0063
8	0.1293	0.1300	0.0581	0.1236	0.0240	0.1290	0.1456

continues

TABLE 5—Continued.

D7S820							
	MICHIGAN	MINNESOTA	APACHE	NAVAJO	NORTHERN ONTARIO	SALISHAN	SASKATCHEWAN
Allele	(N = 58)	(N = 200)	(N = 198)	(N = 182)	(N = 125)	(N = 93)	(N = 79)
8.1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8.2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	0.1638	0.0825	0.0152	0.0000	0.0000	0.0591	0.0316
9.1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9.3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	0.2586	0.2200	0.1869	0.1429	0.2080	0.1398	0.3038
10.1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10.3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
11	0.2845	0.2900	0.4419	0.4093	0.5120	0.4516	0.3165
11.3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	0.1466	0.2425	0.2803	0.2830	0.1960	0.1882	0.1582
13	0.0086	0.0300	0.0101	0.0385	0.0600	0.0323	0.0253
14	0.0086	0.0000	0.0000	0.0000	0.0000	0.0000	0.0127
>14	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Obs. Hom.	25.9%	25.5%	42.4%	23.6%	39.2%	37.6%	34.2%
Exp. Hom.	20.6%	21.4%	31.1%	28.3%	34.5%	27.6%	23.6%
Hom. Test	0.323	0.157	0.001	0.163	0.273	0.031	0.026
Exact Test	0.147	0.275	0.000	0.030	0.193	0.028	0.302
CSF1PO							
	MICHIGAN	MINNESOTA	APACHE	NAVAJO	NORTHERN ONTARIO	SALISHAN	SASKATCHEWAN
Allele	(N = 58)	(N = 200)	(N = 198)	(N = 182)	(N = 125)	(N = 93)	(N = 79)
<6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0054	0.0000
8	0.0000	0.0050	0.0051	0.0165	0.0000	0.0000	0.0000
9	0.0431	0.0775	0.0328	0.0495	0.0440	0.0376	0.0633
10	0.2328	0.3200	0.2374	0.2610	0.3760	0.2419	0.2785
10.3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
11	0.2672	0.2300	0.2702	0.3489	0.1040	0.1129	0.1076
11.1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	0.3621	0.3125	0.4040	0.2940	0.4440	0.5000	0.4937
12.1	0.0000	0.0000	0.0000	0.0082	0.0000	0.0000	0.0000
13	0.0862	0.0475	0.0480	0.0192	0.0120	0.1022	0.0443
14	0.0086	0.0075	0.0025	0.0000	0.0200	0.0000	0.0127
15	0.0000	0.0000	0.0000	0.0027	0.0000	0.0000	0.0000
Obs. Hom.	27.6%	20.5%	29.8%	28.6%	36.8%	25.8%	35.4%
Exp. Hom.	26.0%	25.9%	29.4%	27.7%	34.9%	33.0%	33.5%
Hom. Test	0.779	0.079	0.908	0.803	0.659	0.142	0.711
Exact Test	0.576	0.506	0.881	0.502	0.136	0.369	0.758

TABLE 5—Continued.

TPOX							
	MICHIGAN	MINNESOTA	APACHE	NAVAJO	NORTHERN ONTARIO	SALISHAN	SASKATCHEWAN
Allele	(N = 58)	(N = 200)	(N = 198)	(N = 182)	(N = 125)	(N = 93)	(N = 79)
<6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0025	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.4569	0.3775	0.2980	0.3489	0.3840	0.5054	0.3101
9	0.0862	0.0425	0.0101	0.0082	0.0120	0.0108	0.0316
10	0.0517	0.0325	0.0278	0.0165	0.0120	0.0108	0.0253
11	0.3190	0.3975	0.3283	0.3764	0.4040	0.2903	0.4177
12	0.0862	0.1475	0.3359	0.2500	0.1840	0.1828	0.2152
13	0.0000	0.0000	0.0000	0.0000	0.0040	0.0000	0.0000
>13	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Obs. Hom.	31.0%	37.5%	31.8%	33.0%	36.0%	45.2%	26.6%
Exp. Hom.	32.2%	32.3%	30.8%	32.4%	34.2%	37.0%	31.4%
Hom. Test	0.847	0.119	0.768	0.879	0.675	0.103	0.354
Exact Test	0.746	0.088	0.359	0.343	0.122	0.190	0.519
THO1							
	MICHIGAN	MINNESOTA	APACHE	NAVAJO	NORTHERN ONTARIO	SALISHAN	SASKATCHEWAN
Allele	(N = 58)	(N = 200)	(N = 198)	(N = 182)	(N = 125)	(N = 93)	(N = 79)
<5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0086	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.1638	0.2025	0.2778	0.1676	0.1360	0.0753	0.2152
7	0.2241	0.4525	0.4343	0.6126	0.6880	0.5591	0.5316
8	0.1207	0.0500	0.0227	0.0549	0.0160	0.0269	0.0127
8.3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	0.1552	0.0650	0.0480	0.0082	0.0080	0.0484	0.0570
9.3	0.3190	0.2275	0.2146	0.1566	0.1520	0.2903	0.1772
10	0.0086	0.0025	0.0025	0.0000	0.0000	0.0000	0.0063
>10	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Obs. Hom.	20.7%	35.0%	35.4%	51.6%	54.4%	35.5%	36.7%
Exp. Hom.	21.1%	30.3%	31.3%	42.9%	51.3%	40.2%	36.0%
Hom. Test	0.942	0.144	0.218	0.018	0.493	0.349	0.892
Exact Test	0.756	0.298	0.062	0.013	0.024	0.560	0.658
D16S539							
	MICHIGAN	MINNESOTA	APACHE	NAVAJO	NORTHERN ONTARIO	SALISHAN	SASKATCHEWAN
Allele	(N = 58)	(NA)	(N = 198)	(N = 185)	(NA)	(NA)	(NA)
<8	0.0000		0.0000	0.0000			
8	0.0086		0.0025	0.0000			
9	0.1121		0.0985	0.1676			
10	0.0862		0.2121	0.1649			

continues

TABLE 5—Continued.

D16S539	MICHIGAN	MINNESOTA	APACHE	NAVAJO	NORTHERN ONTARIO	SALISHAN	SASKATCHEWAN
Allele	(N = 58)	(NA)	(N = 198)	(N = 185)	(NA)	(NA)	(NA)
11	0.2759		0.1364	0.1459			
11.3	0.0000		0.0000	0.0000			
12	0.2672		0.3990	0.3595			
13	0.2414		0.1389	0.1432			
14	0.0086		0.0126	0.0189			
15	0.0000		0.0000	0.0000			
Obs. Hom.	19.0%		20.7%	20.5%			
Exp. Hom.	21.9%		25.0%	22.5%			
Hom. Test	0.587		0.163	0.533			
Exact Test	0.997		0.712	0.648			

TABLE 6— $F_{ST}$  values for the thirteen CODIS core STR loci.

Locus	African American	Caucasian	Hispanic	Asian	Native American
CSF1PO	-0.0009	-0.0007	-0.0003	-0.0012	0.0244
D3S1358	-0.0005	-0.0009	0.0014	0.0035	0.0764
D5S818	0.0010	-0.0001	0.0010	0.0028	0.0656
D7S820	0.0000	-0.0005	0.0010	0.0039	0.0201
D8S1179	-0.0001	0.0000	0.0005	0.0025	0.0125
D13S317	0.0029	-0.0008	0.0047	0.0071	0.0157
D16S539	-0.0013	-0.0005	0.0067	0.0017	0.0132
D18S51	0.0012	0.0001	0.0011	0.0046	0.0268
D21S11	0.0005	0.0008	0.0013	0.0056	0.0371
FGA	0.0004	-0.0004	0.0008	0.0029	0.0168
TH01	0.0015	-0.0012	0.0041	0.0058	0.0356
TPOX	0.0021	-0.0015	0.0024	0.0100	0.0164
vWA	0.0011	-0.0011	0.0029	0.0027	0.0172
$F_{ST}$ over all loci	0.0006	-0.0005	0.0021	0.0039	0.0282

In conclusion, substantial population data are available for the thirteen CODIS STR loci CSF1PO, D3S1358, D5S818, D7S820, D8S1179, D13S317, D16S539, D18S51, D21S11, FGA, TH01, TPOX, and vWA. These data should enable estimation of multiple loci profile frequencies for most scenarios in the United States. The data support that the recommended  $F_{ST}$  value of 0.01 for correcting for population substructure is conservative for most populations and that 0.03 should be used for profile frequency calculations for Native Americans (14).

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## Additional information and reprint requests:

Bruce Budowle  
Forensic Science  
FBI Academy  
Quantico, VA 22135