Notice of release of the 2015 FBI Population Data for the expanded CODIS core STR loci

The FBI Laboratory recently announced an expansion of the original thirteen short tandem repeat (STR) loci that have been the core of the National DNA Index System (NDIS) since 1997 [See D.R. Hares (2015) Selection and Implementation of Expanded CODIS Core Loci in the United States. Forensic Sci. Int. Genet., Volume 17, page 33-34 (available at http://dx.doi.org/10.1016/j.fsigen.2015.03.006)]. Seven additional STR loci were selected by the CODIS Core Loci Working Group and, following an implementation phase concluding on January 1, 2017, will also be required for upload and searching of DNA profiles at NDIS. Collectively, these loci provide greater discrimination potential for human identification applications and enhance kinship analyses typically used in missing person inquiries. Because many of these loci are included in databases worldwide, the expanded STR locus set facilitates international law enforcement and counterterrorism endeavors. The twenty STR loci (the original set: D3S1358, D5S818, D7S820, D8S1179, D13S317, D16S539, D18S51, D21S11, CSF1PO, FGA, TH01, TPOX and vWA; and the additional set: D1S1656, D2S441, D2S1338, D10S1248, D12S391, D19S433 and D22S1045) can be simultaneously genotyped with either the AmpFlSTR® GlobalFiler® (GlobalFiler, Life Technologies, Inc., Carlsbad, CA) or PowerPlex® Fusion™ (Fusion, Promega Corporation, Madison, WI) multiplex amplification systems. These kits also enable the genotyping of SE33 and a Y indel locus (GlobalFiler), Penta D and Penta E (Fusion), and DYS391 (GlobalFiler and Fusion), as well as Amelogenin for sex determination.

The 2015 Expanded FBI STR Population Data includes allele frequencies for the autosomal STR loci as determined with both the GlobalFiler and Fusion kits in African Americans, Caucasians, Southeastern Hispanics, Southwestern Hispanics, Bahamians, Jamaicans, Trinidadians, Apaches, Navajos, Chamorros and Filipinos. Concordance studies on these populations demonstrated genotyping accuracy and identified instances of non-concordance due to rare kit-specific primer binding site variants. Additionally, the results of population genetic analyses supported the usage of these loci and the associated allele frequencies for estimating match statistics in human identity testing. Once the manuscript completes the internal FBI Laboratory internal review process, this population data will be submitted for publication under the title "*Population data on the expanded CODIS core STR loci for eleven populations of significance for forensic DNA analyses in the United States.*"

Please note that the 2015 Expanded FBI STR Population Data and the Amended 1999/2001 FBI STR Population Data were generated using different STR typing kits on the FBI population samples. The Amended 1999/2001 Data corrects the 1999/2001 FBI STR Population Data originally published in *Population data on the thirteen CODIS core short tandem repeat loci in African Americans, U.S. Caucasians, Hispanics, Bahamians, Jamaicans and Trinidadians*, Journal of Forensic Sciences 1999 44(6):1277-86. The Amended data is described in the July 2015 Erratum (available at http://onlinelibrary.wiley.com/doi/10.1111/1556-4029.12806/abstract). The Amended 1999/2001 Data corrects the errors and the duplicated samples present within the original 1999/2001 data, and required no retesting of population samples to make the corrections described in the Erratum.

The 2015 Expanded FBI STR Population Data is the retyping of all of the remaining FBI population samples using the new expanded loci kits. The biggest difference between the 2015 FBI STR Population Data and the Amended 1999/2001 Populations is that the 2015 expanded data combines the African American, Bahamian, and Jamaican populations due to the small genetic distance found among these populations as demonstrated by the population pair-wise Fst values. Additionally, because some of the

original population samples were not available for testing in 2015 and because others yielded partial or no profiles using the new expanded loci kits, the N for some populations in the 2015 Expanded FBI STR Population Data and for some loci within these populations are different from the N values for the 1999/2001 Amended Populations. For example, the Amended 1999/2001 Trinidadian population contains 85 individuals (with an across loci range of from 78 to 85 individuals) while the 2015 expanded data consists of 79 Trinidadian individuals (with an across loci range of 77 to 79, excluding male-specific markers). Other similar differences exist across the two datasets, but the 2015 Expanded FBI STR Populations greatly reduce the instances of within-population, across-loci variation in the N (for the autosomal loci of a given population). The 2015 Expanded FBI STR Populations are being provided as a new data set with more loci for use by laboratories as they migrate to the new expanded loci PCR typing kits in anticipation of the January 2017 deadline for the implementation of the 20 CODIS core loci. In summary, the 1999/2001 Amended and 2015 Expanded FBI STR Populations are independently generated datasets that contain accurate data for different numbers of STR loci and these different datasets contain differences in sample size at both the population and locus levels. BOTH datasets contain sample sizes appropriate for STR DNA databases and all meet population testing criteria, so either the amended or the expanded populations are suitable for use.

Additionally, the FBI Laboratory is providing herein the 2015 Expanded FBI STR allele frequency tables for use by anyone interested in implementing this dataset prior to its formal publication. Please note that while these pre-publication population data tables have undergone extensive review during their compilation by the FBI, they have not yet undergone the formal peer review process required for publication. While the FBI has complete confidence in the accuracy of this data and has implemented the 2015 FBI STR Populations for its own DNA casework examinations, the Laboratory believes it necessary to make potential users aware of this fact so that laboratories can take it consideration during any internal implementation discussions.

If you have any questions, please contact the FBI's DNA Support Unit at 703-632-7572.

African American Expanded 2015 STR Allele Frequency Table

Caucasian Expanded 2015 STR Allele Frequency Table

Southeastern Hispanic Expanded 2015 STR Allele Frequency Table

Southwestern Hispanic Expanded 2015 STR Allele Frequency Table

Apache Expanded 2015 STR Allele Frequency Table

Navajo Expanded 2015 STR Allele Frequency Table

Trinidadian Expanded 2015 STR Allele Frequency Table

Chamorro Expanded 2015 STR Allele Frequency Table

Filipino Expanded 2015 STR Allele Frequency Table

African American 2015 Expanded FBI STR Loci Allele Frequencies

Allele	D3S1358	vWA	D16S539	CSF1PO	TPOX	Y indel	D8S1179	D21S11	D18S51	DYS391	D2S441	D19S433	TH01	FGA	D22S1045	D5S818	D13S317	D7S820	SE33	D10S1248	D1S1656	D12S391	D2S1338	PENTA E	PENTA D	Allele
1						0.002849																				1
2						0.997151																				2
2.2																									0.128229	2.2
3.2																									0.015683	3.2
5													0.000921											0.109057	0.049815	5
6				0.000921	0.071956								0.129834					0.000921						0.001848	0.00369	6
6.4																									0.000923	6.4
7				0.054328	0.023985								0.401473			0.000921	0.000921	0.009208						0.106285	0.02583	7
8			0.0369	0.075506	0.351476		0.000921				0.000921		0.21547		0.001842	0.054328	0.025783	0.173112		0.001842				0.184843	0.115314	8
9	0.001842		0.204797	0.036832	0.21679		0.006446		0.001845	0.011364	0.001842	0.000921	0.14733			0.011971	0.026703	0.142726						0.048983	0.135609	9
9.3													0.094843													9.3
10			0.111624	0.260589	0.091328		0.022099		0.004613	0.744318	0.100368	0.016575	0.010129		0.035912	0.060773	0.032228	0.332413	0.000926	0.008287	0.011971			0.039741	0.121771	10
10.1																		0.000921								10.1
11		0.004604	0.298893	0.221915	0.21679		0.039595		0.006458	0.238636	0.396869	0.075506			0.14733	0.23849	0.280847	0.213628		0.051565	0.058932			0.066543	0.159594	11
11.2												0.000921							0.000926							11.2
11.3											0.032228							0.000921								11.3
12	0.000921		0.181734	0.286372	0.027675		0.121547		0.047048	0.005682	0.153775	0.100368			0.047882	0.382136	0.445672	0.104972	0.001852	0.122468	0.066298		0.000921	0.121996	0.130074	12
12.2												0.058932							0.001852						0.000923	12.2
12.3											0.004604															12.3
13	0.010129	0.015654	0.152214	0.05709			0.211786		0.045203		0.04512	0.274401			0.000921	0.237569	0.142726	0.017495	0.009259	0.232044	0.123389		0.000921	0.113678	0.085793	13
13.2									0.005535			0.056169							0.005556							13.2
13.3											0.001842															13.3
14	0.092081	0.069982	0.012915	0.005525			0.326888		0.050738		0.234807	0.197053			0.096685	0.01105	0.044199	0.003683	0.043519	0.271639	0.233886		0.000921	0.056377	0.01845	14
14.2									0.000923			0.069982							0.00463							14.2
14.3											0.000921										0.010129					14.3
15	0.31768	0.212707	0.000923	0.000921			0.201657		0.167897		0.023941	0.049724			0.214549	0.001842	0.000921		0.05	0.208103	0.183241	0.075506	0.000921	0.051756	0.00738	15
15.2	0.001842								0.000923			0.054328							0.002778							15.2
15.3																					0.014733					15.3
16	0.310313	0.269797					0.056169		0.182657		0.002762	0.011971			0.186004				0.055556	0.086556	0.10221	0.052486	0.056169	0.036969		16
16.1														0.004604							0.000921					16.1
16.2												0.028545							0.000926							16.2
16.3																					0.096685	0.000921				16.3
17	0.203499	0.186924					0.011971		0.176199			0.000921		0.000921	0.244936	0.000921			0.075926	0.016575	0.028545	0.157459	0.103131	0.036969	0.000923	17
17.1																						0.005525				17.1
17.2												0.002762		0.002762					0.001852							17.2
17.3																					0.046041	0.000921				17.3
18	0.056169	0.14825					0.000921		0.122694					0.002762	0.017495				0.12963	0.000921	0.002762	0.22744	0.049724	0.012939		18
18.2												0.000921		0.015654												18.2
18.3																					0.017495	0.003683				18.3
19	0.004604	0.067219							0.086716					0.062615	0.005525				0.142593			0.144567	0.143646	0.004621		19
19.1																						0.009208				19.1
19.2														0.003683					0.000926							19.2
19.3																					0.002762					19.3
20	0.000921	0.023941							0.059963					0.064457	0.000921				0.087963			0.130755	0.081031	0.003697		20
20.1																			0.000926			0.001842				20.1
20.2																			0.001852							20.2
21		0.000921							0.021218					0.106814					0.052778			0.069982	0.139963	0.003697		21
21.2									0.001845					0.000921					0.009259							21.2
22									0.013838					0.188766					0.012963			0.05709	0.14825			22
22.2														0.001842					0.008333							22.2
22.3														0.000921												22.3
23									0.002768					0.161142					0.002778			0.035912	0.106814			23
23.2																			0.012037							23.2
24									0.000923					0.171271								0.016575	0.074586			24
24.2								0.000921											0.018519							24.2
24.3								0.003683						0.000921												24.3
25														0.10221					0.001852			0.008287	0.067219			25
25.2																			0.035185							25.2
26								0.000921						0.038674								0.001842	0.023941			26
26.2																			0.053704							26.2
27								0.065378						0.041436					0.000926				0.001842			27
27.2																			0.052778							27.2
28								0.242173						0.012891					0.000926							28
28.2																			0.048148							28.2
29								0.18232						0.005525												29
29.2																			0.027778							29.2
29.3								0.000921																		29.3
30								0.169429						0.000921					0.000926							30
30.2								0.011971						0.001842					0.022222							30.2
30.3								0.000921																		30.3
31								0.084715						0.000921												31
31.2								0.056169											0.010185							31.2
32								0.013812																		32
32.1								0.000921																		32.1
32.2								0.073665											0.005556							32.2
33								0.005525																		33
33.2								0.037753											0.001852							33.2
34								0.007366											0.000926							34
34.1														0.000921												34.1
34.2								0.001842											0.000926							34.2
35								0.033149																		35
36								0.002762																		36
37								0.002762																		37
38								0.000921																		38
44.2														0.001842												44.2
45.2														0.001842												45.2
48.2														0.000921												48.2
Allele	D3S1358	vWA	D16S539	CSF1PO	TPOX	Y indel	D8S1179	D21S11	D18S51	DYS391	D2S441	D19S433	TH01	FGA	D22S1045	D5S818	D13S317	D7S820	SE33	D10S1248	D1S1656	D12S391	D2S1338	PENTA E	PENTA D	**Allele**
N	543	543	542	543	542	351	543	543	542	352	543	543	543	543	543	543	543	543	540	543	543	543	543	543	542	

Caucasian 2015 Expanded FBI STR Loci Allele Frequencies

Allele	D3S1358	vWA	D16S539	CSF1PO	TPOX	Y indel	D8S1179	D21S11	D18S51	DYS391	D2S441	D19S433	TH01	FGA	D22S1045	D5S818	D13S317	D7S820	SE33	D10S1248	D1S1656	D12S391	D2S1338	PENTA E	PENTA D	Allele
2						1.0000																				2
2.2																									0.0050	2.2
5																								0.0792		5
6													0.2252					0.0025						0.0025		6
7				0.0025									0.1733					0.0173						0.1361	0.0050	7
8			0.0198	0.0050	0.5470		0.0198						0.1262				0.1015	0.1634						0.0173	0.0173	8
8.3													0.0025													8.3
9			0.1040	0.0198	0.1238		0.0099			0.0206	0.0025		0.1658			0.0297	0.0817	0.1460						0.0124	0.2351	9
9.3													0.3045													9.3
10			0.0644	0.2525	0.0371		0.1089		0.0149	0.4536	0.1807		0.0025			0.0495	0.0495	0.2896		0.0025	0.0050			0.0941	0.1163	10
10.3				0.0025																						10.3
11			0.2723	0.2995	0.2550		0.0594		0.0124	0.5258	0.3094				0.1436	0.4084	0.3119	0.2030		0.0025	0.0693			0.0990	0.1337	11
11.3											0.0842															11.3
12			0.3416	0.3267	0.0371		0.1411		0.1287		0.0495	0.0965			0.0074	0.3515	0.3094	0.1411	0.0173	0.0371	0.1188			0.1584	0.2104	12
12.2												0.0050														12.2
12.3											0.0025															12.3
13	0.0025	0.0050	0.1634	0.0718			0.3342		0.1188		0.0495	0.2797			0.0050	0.1510	0.1114	0.0297	0.0074	0.3366	0.0495			0.1089	0.2079	13
13.2												0.0223							0.0025							13.2
14	0.1386	0.0990	0.0322	0.0149			0.2054		0.1757		0.2624	0.3490			0.0619	0.0074	0.0347	0.0074	0.0272	0.2748	0.0916			0.0718	0.0545	14
14.2												0.0099							0.0025							14.2
14.3																					0.0074					14.3
15	0.2475	0.1139	0.0025	0.0050			0.1064		0.1337		0.0520	0.1436			0.3639	0.0025			0.0421	0.1733	0.1436	0.0396		0.0421	0.0149	15
15.2												0.0248														15.2
15.3																					0.0594					15.3
16	0.2327	0.2054					0.0124		0.1040		0.0074	0.0396			0.3168				0.0421	0.1312	0.1114	0.0421	0.0297	0.0446		16
16.2												0.0198														16.2
16.3																			0.0025		0.0520					16.3
16.4																								0.0025		16.4
17	0.2104	0.2673					0.0025		0.1535			0.0025			0.0965				0.0718	0.0396	0.0569	0.1040	0.1931	0.0693		17
17.2												0.0050														17.2
17.3																			0.0025		0.1510	0.0248				17.3
18	0.1634	0.2178							0.0916					0.0297	0.0050				0.0792	0.0025		0.1757	0.0668	0.0297		18
18.2												0.0025														18.2
18.3																			0.0025		0.0718	0.0198				18.3
19	0.0050	0.0817							0.0347					0.0545					0.0668			0.1064	0.1510	0.0124		19
19.2																			0.0050							19.2
19.3																					0.0124	0.0099				19.3
20		0.0099							0.0248					0.1436					0.0421			0.1040	0.1485	0.0124		20
20.2														0.0025					0.0173							20.2
20.3																						0.0025				20.3
21									0.0050					0.1757					0.0248			0.1337	0.0198	0.0074		21
21.2																			0.0124							21.2
22									0.0025					0.1881					0.0050			0.1040	0.0297			22
22.2														0.0099					0.0272							22.2
23														0.1584					0.0050			0.0743	0.1213			23
23.2																			0.0421							23.2
24														0.1386					0.0025			0.0272	0.1213			24
24.2								0.0050											0.0297							24.2
25														0.0718					0.0025			0.0248	0.0965			25
25.2																			0.0495							25.2
26														0.0173								0.0050	0.0223			26
26.2																			0.0371							26.2
27								0.0446						0.0099								0.0025				27
27.2																			0.0644							27.2
28								0.1683																		28
28.2																			0.0693							28.2
29								0.1807																		29
29.2																			0.0916							29.2
30								0.2327																		30
30.2								0.0396											0.0545							30.2
31								0.0718																		31
31.2								0.1015											0.0297							31.2
32								0.0149											0.0025							32
32.2								0.1089											0.0099							32.2
33.2								0.0297											0.0074							33.2
34																			0.0025							34
35.2								0.0025																		35.2
Allele	D3S1358	vWA	D16S539	CSF1PO	TPOX	Y indel	D8S1179	D21S11	D18S51	DYS391	D2S441	D19S433	TH01	FGA	D22S1045	D5S818	D13S317	D7S820	SE33	D10S1248	D1S1656	D12S391	D2S1338	PENTA E	PENTA D	**Allele**
N	202	202	202	202	202	97	202	202	202	97	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	

SE Hispanics 2015 Expanded FBI STR Loci Allele Frequencies

Allele	D3S1358	vWA	D16S539	CSF1PO	TPOX	Y indel	D8S1179	D21S11	D18S51	DYS391	D2S441	D19S433	TH01	FGA	D22S1045	D5S818	D13S317	D7S820	SE33	D10S1248	D1S1656	D12S391	D2S1338	PENTA E	PENTA D	Allele
2						1																				2
2.2																									0.007605	2.2
3.2																									0.001901	3.2
5																								0.068441	0.001901	5
6					0.005703								0.249049											0.001901	0.001901	6
7				0.005703	0.003802								0.235741			0.009506		0.013308						0.119772	0.005703	7
8			0.028517	0.003802	0.505703		0.011407				0.001901		0.093156			0.005703	0.110266	0.159696						0.034221	0.015209	8
8.3													0.001901													8.3
9			0.159696	0.020913	0.098859		0.007605			0.048387	0.001901		0.176806			0.043726	0.095057	0.117871						0.005703	0.178707	9
9.3													0.237643													9.3
10			0.072243	0.275665	0.060837		0.081749		0.005703	0.524194	0.23384		0.005703		0.003802	0.081749	0.08365	0.26616		0.001901	0.001901			0.070342	0.146388	10
11	0.001901		0.249049	0.304183	0.275665		0.08365		0.013308	0.395161	0.319392	0.011407			0.081749	0.3327	0.281369	0.212928	0.001901	0.007605	0.055133			0.131179	0.152091	11
11.2												0.001901							0.001901							11.2
11.3											0.062738															11.3
12	0.001901		0.273764	0.315589	0.045627		0.127376		0.127376	0.032258	0.026616	0.06654			0.009506	0.351711	0.247148	0.176806		0.058935	0.106464			0.138783	0.193916	12
12.2												0.003802							0.005703							12.2
12.3											0.003802															12.3
13	0.005703		0.190114	0.062738	0.003802		0.323194		0.146388		0.028517	0.271863			0.003802	0.169202	0.123574	0.04943	0.009506	0.262357	0.093156			0.121673	0.201521	13
13.2												0.041825														13.2
14	0.077947	0.112167	0.026616	0.007605			0.209125		0.140684		0.298479	0.264259			0.030418	0.005703	0.058935	0.003802	0.024715	0.302281	0.091255			0.077947	0.064639	14
14.2									0.003802			0.043726														14.2
14.3																			0.001901		0.009506					14.3
15	0.340304	0.125475		0.003802			0.129278		0.157795		0.020913	0.1673			0.425856				0.038023	0.211027	0.152091	0.038023		0.045627	0.020913	15
15.2												0.051331														15.2
15.3																					0.053232					15.3
16	0.23384	0.231939					0.020913		0.152091		0.001901	0.04943			0.353612				0.064639	0.110266	0.123574	0.028517	0.036122	0.032319	0.007605	16
16.2												0.015209							0.001901							16.2
16.3																					0.055133					16.3
17	0.180608	0.260456					0.005703		0.117871			0.007605			0.077947				0.081749	0.041825	0.060837	0.077947	0.247148	0.058935		17
17.2												0.001901														17.2
17.3																					0.134981	0.024715				17.3
18	0.146388	0.188213							0.053232					0.007605	0.011407				0.098859	0.001901	0.005703	0.207224	0.081749	0.030418		18
18.2												0.001901														18.2
18.3																					0.04943	0.026616				18.3
19	0.009506	0.062738							0.032319					0.074144	0.001901				0.079848	0.001901		0.131179	0.153992	0.022814		19
19.2																			0.001901			0.001901				19.2
19.3																					0.005703	0.009506				19.3
20	0.001901	0.01711							0.020913					0.110266					0.051331			0.146388	0.163498	0.01711		20
20.2																			0.011407							20.2
20.3														0.001901							0.001901	0.007605				20.3
21									0.01711					0.1673					0.028517			0.091255	0.038023	0.015209		21
21.2														0.003802					0.015209							21.2
22									0.005703					0.1673					0.011407			0.095057	0.038023	0.005703		22
22.2														0.007605					0.019011							22.2
23		0.001901							0.003802					0.142586					0.001901			0.077947	0.089354			23
23.2														0.003802					0.032319							23.2
24														0.134981								0.024715	0.077947			24
24.2								0.001901											0.020913							24.2
25														0.106464								0.007605	0.064639	0.001901		25
25.2																			0.038023							25.2
26														0.051331					0.003802			0.001901	0.007605			26
26.2																			0.055133							26.2
27								0.030418						0.01711					0.001901			0.001901	0.001901			27
>27									0.001901																	>27
27.2																			0.064639							27.2
28								0.110266																		28
28.2																			0.077947							28.2
29								0.226236						0.001901												29
29.2								0.003802											0.055133							29.2
30								0.258555						0.001901												30
30.2								0.036122											0.045627							30.2
31								0.051331																		31
31.2								0.117871											0.038023							31.2
32								0.005703																		32
32.2								0.102662											0.005703							32.2
33.2								0.045627											0.001901							33.2
34								0.001901											0.005703							34
34.2								0.003802																		34.2
35								0.003802											0.001901							35
Allele	D3S1358	vWA	D16S539	CSF1PO	TPOX	Y indel	D8S1179	D21S11	D18S51	DYS391	D2S441	D19S433	TH01	FGA	D22S1045	D5S818	D13S317	D7S820	SE33	D10S1248	D1S1656	D12S391	D2S1338	PENTA E	PENTA D	**Allele**
N	263	263	263	263	263	124	263	263	263	124	263	263	263	263	263	263	263	263	263	263	263	263	263	263	263	

SW Hispanics 2015 Expanded FBI STR Loci Allele Frequencies

Allele	D3S1358	vWA	D16S539	CSF1PO	TPOX	Y indel	D8S1179	D21S11	D18S51	DYS391	D2S441	D19S433	TH01	FGA	D22S1045	D5S818	D13S317	D7S820	SE33	D10S1248	D1S1656	D12S391	D2S1338	PENTA E	PENTA D	Allele
2						1																				2
2.2																									0.014354	2.2
5													0.002392											0.035885	0.004785	5
6					0.004785								0.232057					0.002392						0.002392		6
7				0.002392	0.004785								0.337321			0.062201		0.021531						0.088517	0.002392	7
8			0.016746		0.555024		0.002392						0.08134			0.002392	0.07177	0.098086						0.014354	0.019139	8
9			0.078947	0.007177	0.033493		0.002392		0.002392	0.057692	0.007177	0.002392	0.102871			0.057416	0.222488	0.047847		0.004785				0.009569	0.198565	9
9.1											0.002392															
9.3													0.241627													9.3
10			0.177033	0.253589	0.033493		0.098086		0.002392	0.528846	0.435407		0.002392		0.007177	0.064593	0.100478	0.30622		0.002392				0.035885	0.210526	10
11		0.002392	0.315789	0.26555	0.272727		0.066986		0.011962	0.403846	0.255981	0.004785			0.090909	0.42823	0.198565	0.289474		0.002392	0.033493			0.07177	0.138756	11
11.2												0.002392														
11.3											0.04067															11.3
12			0.287081	0.392344	0.093301		0.117225		0.107656	0.009615	0.021531	0.07177			0.011962	0.282297	0.215311	0.191388	0.002392	0.023923	0.074163			0.191388	0.136364	12
12.2												0.016746														12.2
13	0.002392		0.100478	0.064593	0.002392		0.322967		0.167464		0.016746	0.177033			0.007177	0.095694	0.133971	0.038278	0.002392	0.244019	0.095694			0.110048	0.205742	13
13.2												0.095694							0.002392							13.2
14	0.078947	0.062201	0.023923	0.009569			0.246411		0.169856		0.186603	0.308612			0.021531	0.004785	0.057416	0.004785	0.021531	0.354067	0.114833	0.002392		0.066986	0.062201	14
14.2												0.04067							0.004785							14.2
14.3																					0.004785					14.3
15	0.425837	0.07177		0.004785			0.11244		0.141148		0.0311	0.119617			0.423445	0.002392			0.033493	0.244019	0.150718	0.035885		0.102871	0.004785	15
15.2												0.090909							0.002392							15.2
15.3																					0.028708					15.3
16	0.26555	0.366029					0.023923		0.114833		0.002392	0.038278			0.370813				0.033493	0.100478	0.200957	0.043062	0.019139	0.114833	0.002392	16
16.2												0.028708							0.004785							16.2
16.3																					0.0311					16.3
17	0.126794	0.22488					0.007177		0.138756			0.002392			0.059809				0.090909	0.021531	0.08134	0.069378	0.200957	0.045455		17
17.3																			0.004785		0.129187	0.007177				17.3
18	0.083732	0.188995							0.050239					0.002392	0.007177				0.12201	0.002392	0.009569	0.172249	0.038278	0.038278		18
18.3																					0.033493	0.011962				18.3
19	0.014354	0.07177							0.038278					0.083732					0.098086		0.002392	0.241627	0.260766	0.035885		19
19.3																					0.009569	0.007177				19.3
20	0.002392	0.011962							0.016746					0.069378					0.033493			0.188995	0.131579	0.014354		20
20.2														0.002392					0.002392							20.2
20.3																						0.002392				20.3
21									0.019139					0.129187					0.023923			0.088517	0.014354	0.011962		21
21.2														0.002392												21.2
22									0.007177					0.172249					0.007177			0.064593	0.07177	0.004785		22
22.2														0.004785					0.009569							22.2
23									0.007177					0.136364								0.045455	0.143541	0.002392		23
23.2														0.007177					0.009569							23.2
24									0.002392					0.131579								0.007177	0.066986	0.002392		24
24.2								0.002392											0.026316							24.2
25									0.002392					0.141148								0.011962	0.04067			25
25.2																			0.038278							25.2
26														0.08134					0.004785				0.011962			26
26.2																			0.066986							26.2
27								0.009569						0.033493												27
27.2																			0.066986							27.2
28								0.07177						0.002392												28
28.2																			0.098086							28.2
29								0.208134																		29
29.2								0.002392											0.066986							29.2
30								0.322967																		30
30.2								0.033493											0.052632							30.2
31								0.069378																		31
31.2								0.083732											0.04067							31.2
32								0.014354																		32
32.2								0.136364											0.023923							32.2
33																			0.002392							33
33.2								0.04067																		33.2
34																			0.002392							34
34.2								0.004785																		34.2
Allele	D3S1358	vWA	D16S539	CSF1PO	TPOX	Y indel	D8S1179	D21S11	D18S51	DYS391	D2S441	D19S433	TH01	FGA	D22S1045	D5S818	D13S317	D7S820	SE33	D10S1248	D1S1656	D12S391	D2S1338	PENTA E	PENTA D	**Allele**
N	209	209	209	209	209	104	209	209	209	104	209	209	209	209	209	209	209	209	209	209	209	209	209	209	209	

Apache 2015 Expanded FBI STR Loci Allele Frequencies

Allele	D3S1358	vWA	D16S539	CSF1PO	TPOX	Y indel	D8S1179	D21S11	D18S51	DYS391	D2S441	D19S433	TH01	FGA	D22S1045	D5S818	D13S317	D7S820	SE33	D10S1248	D1S1656	D12S391	D2S1338	PENTA E	PENTA D	Allele
2						1																				2
2.2																									0.002604	2.2
6													0.289063													6
7													0.421875			0.135417		0.007813						0.015625		7
8			0.002604	0.005208	0.302083								0.020833			0.013021	0.010417	0.057292						0.002604	0.002604	8
9			0.096354	0.028646	0.005208		0.005208			0.032967	0.002604		0.044271			0.018229	0.307292	0.018229						0.002604	0.276042	9
9.3													0.221354													9.3
10			0.223958	0.236979	0.028646		0.138021		0.002604	0.813187	0.453125		0.002604			0.111979	0.072917	0.192708			0.018229				0.171875	10
11			0.138021	0.270833	0.330729		0.046875		0.005208	0.153846	0.432292				0.111979	0.554688	0.229167	0.427083			0.010417			0.007813	0.15625	11
11.3											0.005208															11.3
12			0.398438	0.403646	0.333333		0.065104		0.106771		0.028646	0.010417			0.002604	0.070313	0.231771	0.283854		0.002604				0.098958	0.1875	12
12.2												0.005208														12.2
13	0.002604		0.132813	0.046875			0.291667		0.200521		0.002604	0.260417			0.002604	0.09375	0.132813	0.013021		0.111979	0.09375			0.174479	0.190104	13
13.2									0.005208			0.169271														13.2
14	0.059896	0.03125	0.007813	0.007813			0.333333		0.164063		0.070313	0.226563			0.020833	0.002604	0.015625		0.002604	0.453125	0.119792			0.161458	0.013021	14
14.2												0.049479														14.2
15	0.684896	0.015625					0.117188		0.072917		0.005208	0.184896			0.419271				0.005208	0.354167	0.125	0.007813		0.083333		15
15.2												0.044271							0.002604							15.2
16	0.184896	0.518229					0.002604		0.260417			0.023438			0.333333				0.052083	0.072917	0.208333	0.033854	0.002604	0.143229		16
16.2												0.026042														16.2
16.3																					0.039063					16.3
17	0.044271	0.205729							0.111979						0.09375				0.03125	0.005208	0.109375	0.119792	0.044271	0.148438		17
17.3																					0.151042					17.3
18	0.023438	0.143229							0.041667					0.002604	0.010417				0.216146		0.010417	0.192708	0.023438	0.065104		18
18.2																			0.005208							18.2
18.3																					0.09375	0.002604				18.3
19		0.0625							0.010417					0.203125	0.005208				0.065104			0.263021	0.328125	0.028646		19
19.2																			0.002604			0.002604				19.2
19.3																					0.020833					19.3
20		0.023438							0.007813					0.117188					0.075521			0.268229	0.190104	0.049479		20
21									0.007813					0.075521					0.007813			0.067708	0.0625	0.013021		21
22									0.002604					0.057292					0.010417			0.020833	0.164063	0.005208		22
22.3																							0.002604			22.3
23														0.052083								0.020833	0.085938			23
23.2																			0.002604							23.2
24														0.153646									0.065104			24
24.2																			0.002604							24.2
25														0.231771									0.015625			25
25.2																			0.03125							25.2
26														0.088542									0.007813			26
26.2																			0.044271							26.2
27								0.002604						0.013021									0.007813			27
27.2																			0.067708							27.2
28								0.023438						0.005208												28
28.2																			0.179688							28.2
29								0.119792																		29
29.2								0.005208											0.059896							29.2
30								0.544271																		30
30.2								0.005208											0.088542							30.2
31								0.041667																		31
31.2								0.184896											0.03125							31.2
32								0.007813																		32
32.2								0.057292											0.015625							32.2
33.2								0.007813																		33.2
Allele	D3S1358	vWA	D16S539	CSF1PO	TPOX	Y indel	D8S1179	D21S11	D18S51	DYS391	D2S441	D19S433	TH01	FGA	D22S1045	D5S818	D13S317	D7S820	SE33	D10S1248	D1S1656	D12S391	D2S1338	PENTA E	PENTA D	**Allele**
N	192	192	192	192	192	91	192	192	192	91	192	192	192	192	192	192	192	192	192	192	192	192	192	192	192	

Navajo 2015 Expanded FBI STR Loci Allele Frequencies

Allele	D3S1358	vWA	D16S539	CSF1PO	TPOX	Y indel	D8S1179	D21S11	D18S51	DYS391	D2S441	D19S433	TH01	FGA	D22S1045	D5S818	D13S317	D7S820	SE33	D10S1248	D1S1656	D12S391	D2S1338	PENTA E	PENTA D	Allele
2						1																				2
6													0.188811													6
7													0.590909			0.125874		0.003497						0.003497		7
8				0.013986	0.342657								0.052448			0.045455	0.006993	0.104895						0.003497		8
9			0.185315	0.059441	0.01049								0.01049			0.003497	0.244755								0.300699	9
9.3													0.157343													9.3
10			0.167832	0.258741	0.017483		0.13986			0.85	0.335664					0.066434	0.167832	0.13986			0.003497			0.003497	0.255245	10
11			0.146853	0.34965	0.388112		0.059441		0.003497	0.125	0.566434				0.129371	0.608392	0.22028	0.402098						0.024476	0.094406	11
11.2												0.003497														11.2
12			0.363636	0.29021	0.241259		0.104895		0.101399	0.025	0.045455	0.013986				0.108392	0.181818	0.307692			0.006993			0.059441	0.115385	12
12.1				0.01049																						12.1
13	0.01049		0.122378	0.017483			0.388112		0.304196		0.003497	0.195804				0.041958	0.164336	0.041958		0.115385	0.059441			0.122378	0.22028	13
13.2												0.132867														13.2
14	0.027972	0.020979	0.013986				0.202797		0.15035		0.048951	0.314685			0.006993		0.013986			0.482517	0.108392			0.031469	0.013986	14
14.2												0.097902														14.2
15	0.751748	0.020979					0.090909		0.08042			0.132867			0.493007				0.041958	0.335664	0.13986	0.006993		0.160839		15
15.2												0.052448														15.2
15.3																					0.003497					15.3
16	0.13986	0.409091					0.013986		0.181818			0.01049			0.272727				0.052448	0.066434	0.321678	0.041958	0.013986	0.143357		16
16.2												0.045455														16.2
16.3																					0.062937					16.3
17	0.055944	0.335664							0.118881						0.094406				0.048951		0.055944	0.111888	0.045455	0.143357		17
17.3																					0.132867	0.003497				17.3
18	0.01049	0.15035							0.020979					0.017483	0.003497				0.241259		0.003497	0.185315	0.059441	0.062937		18
18.3																					0.090909					18.3
19	0.003497	0.059441							0.020979					0.157343					0.125874			0.307692	0.286713	0.087413		19
19.2																						0.003497				19.2
19.3																					0.01049	0.003497				19.3
20		0.003497							0.01049					0.097902					0.052448			0.20979	0.08042	0.062937		20
21									0.006993					0.125874					0.034965			0.08042	0.048951	0.027972		21
22														0.08042					0.024476			0.020979	0.122378	0.041958		22
22.2																			0.003497							22.2
23														0.052448								0.013986	0.227273	0.006993		23
24														0.129371								0.01049	0.076923	0.01049		24
24.2																			0.003497							24.2
25														0.174825									0.017483	0.003497		25
25.2																			0.045455							25.2
26														0.104895									0.003497			26
26.2																			0.020979							26.2
27														0.052448									0.017483			27
27.2																			0.059441							27.2
28								0.041958						0.006993												28
28.2																			0.045455							28.2
29								0.178322																		29
29.2																			0.059441							29.2
30								0.5																		30
30.2																			0.101399							30.2
31								0.055944																		31
31.2								0.073427											0.020979							31.2
32.2								0.125874											0.017483							32.2
33.2								0.024476																		33.2
Allele	D3S1358	vWA	D16S539	CSF1PO	TPOX	Y indel	D8S1179	D21S11	D18S51	DYS391	D2S441	D19S433	TH01	FGA	D22S1045	D5S818	D13S317	D7S820	SE33	D10S1248	D1S1656	D12S391	D2S1338	PENTA E	PENTA D	**Allele**
N	143	143	143	143	143	40	143	143	143	40	143	143	143	143	143	143	143	143	143	143	143	143	143	143	143	

Trinidad 2015 Expanded FBI STR Loci Allele Frequencies

Allele	D3S1358	vWA	D16S539	CSF1PO	TPOX	Y indel	D8S1179	D21S11	D18S51	DYS391	D2S441	D19S433	TH01	FGA	D22S1045	D5S818	D13S317	D7S820	SE33	D10S1248	D1S1656	D12S391	D2S1338	PENTA E	PENTA D	Allele
1						0.02																				1
2						0.98																				2
2.2																									0.090909	2.2
3.2																									0.006494	3.2
5													0.006329											0.058442	0.032468	5
6					0.088608								0.189873												0.012987	6
7				0.06962	0.012658								0.310127			0.012658		0.006329						0.077922	0.025974	7
7.2									0.006329																	7.2
8			0.063291	0.056962	0.329114		0.006329						0.21519			0.025316	0.056962	0.202532			0.006329			0.116883	0.084416	8
9			0.151899	0.018987	0.164557					0.04			0.189873			0.018987	0.044304	0.113924						0.058442	0.188312	9
9.3													0.075949													9.3
10			0.126582	0.272152	0.06962		0.056962			0.72	0.170886	0.006329	0.012658		0.050633	0.158228	0.050633	0.335443			0.006329			0.025974	0.12987	10
11		0.006329	0.297468	0.21519	0.28481		0.063291		0.025316	0.24	0.398734	0.044304			0.221519	0.297468	0.297468	0.221519		0.012658	0.075949			0.058442	0.214286	11
11.3											0.050633															11.3
12			0.177215	0.278481	0.050633		0.151899		0.082278		0.132911	0.088608			0.012658	0.316456	0.297468	0.107595	0.006329	0.082278	0.06962			0.162338	0.071429	12
12.2												0.018987														12.2
13		0.006329	0.14557	0.075949			0.227848		0.094937		0.025316	0.379747				0.139241	0.164557	0.012658	0.031646	0.240506	0.139241			0.097403	0.084416	13
13.2									0.006329			0.044304							0.006329							13.2
13.3			0.006329																							13.3
14	0.056962	0.088608	0.031646	0.012658			0.246835		0.107595		0.208861	0.158228			0.126582	0.025316	0.088608		0.050633	0.253165	0.183544			0.058442	0.038961	14
14.2												0.050633							0.006329							14.2
15	0.316456	0.132911					0.183544		0.151899		0.012658	0.075949			0.240506				0.037975	0.240506	0.189873	0.056962		0.084416	0.019481	15
15.2												0.094937														15.2
15.3																					0.006329					15.3
16	0.310127	0.297468					0.063291		0.208861			0.018987			0.202532	0.006329			0.050633	0.14557	0.107595	0.050633	0.031646	0.051948		16
16.2												0.018987														16.2
16.3																			0.006329		0.088608					16.3
17	0.202532	0.265823							0.056962						0.14557				0.101266	0.018987	0.025316	0.164557	0.120253	0.090909		17
17.1																						0.006329				17.1
17.3																					0.063291	0.006329				17.3
18	0.113924	0.139241							0.050633					0.012658					0.101266	0.006329		0.297468	0.056962	0.025974		18
18.3																					0.018987					18.3
19		0.050633							0.088608					0.056962					0.088608		0.006329	0.139241	0.21519	0.019481		19
19.2																						0.006329				19.2
19.3																					0.006329					19.3
20		0.012658							0.075949					0.094937					0.101266			0.139241	0.082278	0.006494		20
20.3																					0.006329					20.3
21									0.044304					0.101266					0.056962			0.031646	0.126582			21
21.2																			0.006329							21.2
22														0.170886					0.012658			0.063291	0.107595	0.006494		22
23														0.158228								0.031646	0.101266			23
23.2																			0.006329							23.2
24														0.208861								0.006329	0.06962			24
24.2																			0.012658							24.2
25														0.101266									0.063291			25
25.2																			0.018987							25.2
26														0.044304									0.025316			26
26.2																			0.056962							26.2
27								0.063291						0.018987												27
27.2																			0.075949							27.2
28								0.227848						0.012658												28
28.2																			0.044304							28.2
29								0.208861						0.006329					0.006329							29
29.2								0.006329											0.012658							29.2
30								0.158228																		30
30.2								0.012658						0.006329					0.050633							30.2
31								0.056962						0.006329												31
31.2								0.06962											0.044304							31.2
32								0.031646																		32
32.2								0.075949											0.006329							32.2
33								0.006329																		33
33.2								0.050633																		33.2
34								0.018987																		34
35								0.012658																		35
Allele	D3S1358	vWA	D16S539	CSF1PO	TPOX	Y indel	D8S1179	D21S11	D18S51	DYS391	D2S441	D19S433	TH01	FGA	D22S1045	D5S818	D13S317	D7S820	SE33	D10S1248	D1S1656	D12S391	D2S1338	PENTA E	PENTA D	**Allele**
N	79	79	79	79	79	50	79	79	79	50	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	

Guam Chamorros 2015 Expanded FBI STR Loci Allele Frequencies

Allele	D3S1358	vWA	D16S539	CSF1PO	TPOX	Y indel	D8S1179	D21S11	D18S51	DYS391	D2S441	D19S433	TH01	FGA	D22S1045	D5S818	D13S317	D7S820	SE33	D10S1248	D1S1656	D12S391	D2S1338	PENTA E	PENTA D	Allele
1						0.65625																				1
2						0.34375																				2
5																								0.015789		5
6													0.231579													6
7													0.257895					0.010526						0.052632	0.026316	7
8					0.473684								0.110526				0.173684	0.142105							0.021053	8
9			0.305263	0.015789	0.115789						0.005263		0.263158			0.047368	0.063158	0.073684		0.010526				0.031579	0.394737	9
9.1											0.010526							0.005263								9.1
9.3													0.094737													9.3
10			0.131579	0.226316	0.026316		0.152632		0.005263	0.703125	0.342105		0.042105			0.2	0.089474	0.205263			0.005263			0.031579	0.126316	10
11			0.257895	0.252632	0.342105		0.057895		0.005263	0.28125	0.231579				0.110526	0.263158	0.421053	0.273684			0.094737			0.089474	0.110526	11
11.3											0.105263															11.3
12			0.184211	0.426316	0.042105		0.063158		0.105263	0.015625	0.105263	0.026316				0.331579	0.178947	0.257895	0.005263	0.047368	0.052632			0.073684	0.073684	12
12.2												0.015789														12.2
13	0.005263		0.094737	0.078947			0.373684		0.068421		0.005263	0.352632				0.147368	0.068421	0.031579		0.457895	0.052632			0.031579	0.121053	13
13.2												0.047368														13.2
14	0.052632	0.131579	0.026316				0.152632		0.163158		0.184211	0.236842			0.031579	0.010526	0.005263			0.205263	0.115789			0.063158	0.110526	14
14.2												0.094737														14.2
15	0.284211	0.142105					0.089474		0.210526		0.010526	0.094737			0.378947				0.031579	0.173684	0.152632	0.010526		0.126316	0.005263	15
15.3																					0.015789					15.3
16	0.289474	0.157895					0.094737		0.115789						0.189474				0.031579	0.078947	0.115789	0.021053	0.036842	0.110526	0.010526	16
16.2												0.021053														16.2
16.3																					0.005263					16.3
17	0.257895	0.315789					0.005263		0.168421						0.242105				0.036842	0.021053	0.078947	0.089474	0.105263	0.105263		17
17.2												0.015789														17.2
17.3																					0.252632					17.3
18	0.110526	0.173684					0.010526		0.031579					0.005263	0.047368				0.036842	0.005263	0.015789	0.326316	0.078947	0.084211		18
18.3																					0.026316	0.010526				18.3
19		0.073684							0.021053					0.063158					0.036842		0.005263	0.152632	0.2	0.1		19
19.2																			0.005263							19.2
19.3																					0.005263	0.010526				19.3
20		0.005263							0.068421					0.068421					0.031579			0.136842	0.115789	0.052632		20
20.2																			0.005263							20.2
20.3																					0.005263			0.005263		20.3
21									0.021053					0.084211					0.015789			0.068421	0.010526	0.026316		21
21.2																			0.005263							21.2
22									0.010526					0.236842					0.005263			0.1	0.084211			22
22.2																			0.005263							22.2
23									0.005263					0.110526								0.042105	0.178947			23
23.2																			0.015789							23.2
24														0.205263								0.015789	0.110526			24
24.2																			0.026316							24.2
25														0.105263								0.015789	0.063158			25
25.2																			0.042105							25.2
25.3																			0.021053							25.3
26														0.105263									0.010526			26
26.2																			0.131579							26.2
27								0.005263						0.015789									0.005263			27
27.2																			0.163158							27.2
28								0.063158																		28
28.2																			0.131579							28.2
29								0.194737																		29
29.2																			0.068421							29.2
30								0.184211																		30
30.2								0.005263											0.1							30.2
31								0.210526																		31
31.2								0.052632											0.042105							31.2
32								0.031579																		32
32.2								0.152632											0.005263							32.2
33.2								0.063158																		33.2
34.1								0.005263																		34.1
34.2								0.026316																		34.2
35								0.005263																		35
Allele	D3S1358	vWA	D16S539	CSF1PO	TPOX	Y indel	D8S1179	D21S11	D18S51	DYS391	D2S441	D19S433	TH01	FGA	D22S1045	D5S818	D13S317	D7S820	SE33	D10S1248	D1S1656	D12S391	D2S1338	PENTA E	PENTA D	**Allele**
N	95	95	95	95	95	64	95	95	95	64	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	

Guam Filipinos 2015 Expanded FBI STR Loci Allele Frequencies

Allele	D3S1358	vWA	D16S539	CSF1PO	TPOX	Y indel	D8S1179	D21S11	D18S51	DYS391	D2S441	D19S433	TH01	FGA	D22S1045	D5S818	D13S317	D7S820	SE33	D10S1248	D1S1656	D12S391	D2S1338	PENTA E	PENTA D	Allele
1						0.857143																				1
2						0.142857																				2
5																								0.049451		5
6													0.131868													6
7							0.005495						0.285714			0.016484									0.005495	7
8				0.010989	0.489011								0.087912				0.247253	0.247253							0.049451	8
9			0.307692	0.065934	0.10989					0.085714			0.384615			0.032967	0.087912	0.021978						0.038462	0.406593	9
9.1											0.027473															9.1
9.3													0.032967													9.3
10			0.186813	0.269231	0.010989		0.104396			0.771429	0.208791		0.076923			0.258242	0.126374	0.159341						0.010989	0.17033	10
11			0.230769	0.230769	0.373626		0.104396		0.010989	0.128571	0.21978				0.21978	0.291209	0.28022	0.406593		0.005495	0.181319			0.093407	0.104396	11
11.3											0.120879															11.3
12			0.148352	0.362637	0.016484		0.120879		0.071429	0.014286	0.203297	0.021978				0.230769	0.225275	0.131868	0.005495	0.049451	0.054945			0.120879	0.175824	12
12.2												0.005495														12.2
13			0.120879	0.06044			0.225275		0.071429		0.027473	0.291209				0.17033	0.032967	0.027473		0.324176	0.115385			0.054945	0.076923	13
13.2												0.032967														13.2
14	0.032967	0.148352	0.005495				0.192308		0.186813		0.153846	0.164835			0.027473			0.005495		0.225275	0.076923			0.120879	0.010989	14
14.2												0.087912														14.2
15	0.269231	0.093407					0.148352		0.241758		0.032967	0.093407			0.43956				0.010989	0.269231	0.230769	0.005495		0.126374		15
15.2												0.236264														15.2
15.3																					0.005495					15.3
16	0.263736	0.214286					0.093407		0.115385		0.005495	0.010989			0.153846				0.021978	0.087912	0.208791		0.027473	0.071429		16
16.2												0.049451														16.2
16.3																					0.021978					16.3
17	0.351648	0.258242					0.005495		0.120879					0.005495	0.142857				0.038462	0.038462	0.038462	0.054945	0.098901	0.049451		17
17.2												0.005495														17.2
17.3																					0.06044					17.3
18	0.076923	0.214286							0.032967					0.010989	0.010989				0.027473			0.175824	0.065934	0.071429		18
18.3																					0.005495					18.3
19	0.005495	0.06044							0.065934					0.10989					0.027473			0.214286	0.230769	0.076923		19
19.1																						0.005495				19.1
20		0.005495							0.038462					0.038462	0.005495				0.049451			0.203297	0.071429	0.038462		20
20.2																			0.005495							20.2
21		0.005495							0.005495					0.076923					0.027473			0.087912	0.032967	0.032967		21
21.2																			0.021978							21.2
22									0.021978					0.214286					0.010989			0.153846	0.06044	0.027473		22
22.2																			0.032967							22.2
23									0.005495					0.203297								0.043956	0.137363	0.005495		23
23.2														0.005495					0.071429							23.2
24									0.005495					0.159341								0.032967	0.21978	0.010989		24
24.2														0.005495					0.043956							24.2
25									0.005495					0.082418								0.005495	0.043956			25
25.2																			0.082418							25.2
26														0.071429					0.005495			0.005495	0.010989			26
26.2																			0.10989							26.2
26.3																			0.005495							26.3
27								0.021978						0.010989								0.010989				27
27.2																			0.126374							27.2
28								0.043956																		28
28.2																			0.126374							28.2
29								0.258242																		29
29.2																			0.032967							29.2
30								0.263736																		30
30.2								0.021978											0.076923							30.2
31								0.148352																		31
31.2								0.06044											0.021978							31.2
32								0.049451																		32
32.2								0.071429																		32.2
33								0.021978																		33
33.2								0.016484											0.016484							33.2
34.2								0.010989																		34.2
35.2								0.010989																		35.2
45.2														0.005495												45.2
Allele	D3S1358	vWA	D16S539	CSF1PO	TPOX	Y indel	D8S1179	D21S11	D18S51	DYS391	D2S441	D19S433	TH01	FGA	D22S1045	D5S818	D13S317	D7S820	SE33	D10S1248	D1S1656	D12S391	D2S1338	PENTA E	PENTA D	**Allele**
N	91	91	91	91	91	70	91	91	91	70	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	