B36 Paraguayan Population Data on the Fifteen STR Loci Included in the Powerplex 16™ Kit

Esther Martinex-Espin, MS, Francisco Fernandez-Rosado, MS, J. Carlos Alvarez, MS, Carmen Entrala, PhD, Jose A. Lorente, MD, PhD, and Miguel Lorente, MD, PhD, University of Granada, Department Legal Medicine, Av. Madrid 11, Granada, Spain; Marta Oviedo de Duarte, MS, Paraguay National Police, Policia Nacional, Laboratorio De Adn, Asunción, Paraguay; Bruce Budowle, PhD, FBI Academy, FSRTC, Quantico, VA; and Enrique Villanueva, MD, PhD, University of Granada, Department. Legal Medicine, Av. Madrid 11, Granada, Spain*

The goal of this presentation is to present the results and parameters of forensic interest (HWE, PD, PE) of the Paraguayan population for the 15 STR loci included in the Powerplex™ 16 (Promega Corporation, Madison, WI).

The typing of STR loci is facilitated by the ability to amplify several loci simultaneously in a multiplex polymerase chain reaction (PCR).

The 16 STR loci D3S1358, TH011, D21S11, D18S51, PentaE, D5S818, 13S317, D7S820, D16S539, CSF1PO, PentaD, vWA, D8S1179, TPOX, FGA, and the locus amelogenin can be amplified simultaneously using the the the Powerplex™ 16 kit.

This paper presents allele distribution data in the general population of Paraguay. Blood samples were spotted and preserved on FTA paper (Whatman Bioscience, Newton, MS). Extracted DNA samples (n=168) were amplified at the 16 loci using the Powerplex™ 16 kit. Samples were analyzed using the ABI Prism™ 310 Genetic Analyzer (PE Biosystems, Foster City, CA) according to the manufacturer's recommended protocol.

All 15 loci are highly polymorphic in the Paraguayan sample population with the locus TPOX having the lowest observed heterozy- gosity, and the locus PentaE displaying the highest heterozygosity. The most discriminating loci were PentaE (PD=0.979) and FGA (PD=0.966). The combined probability of exclusion for the 15 STR loci is 0.99999944. There was no evidence for departures from Hardy-Weinberg expectations (HWE) in this sample population. An inter-class correlation test analysis was performed to detect any correlations between alleles at any of the pair-wise comparisons of the 15 loci. A résumé of the PD and PE are shown in this table:

Locus	PD(Obs)	PD(Exp)	PE
1D3S1358	0.89151077	0.89271689	0.51483624
2vWA	0.91546202	0.91200720	0.55883360
3FGA	0.96598639	0.97001290	0.74098142
4D8S1179	0.92368197	0.92780471	0.59971637
5D21S11	0.95351474	0.95583990	0.68506984
6D18S51	0.95897109	0.96280685	0.71032591
7D5S818	0.86323696	0.86249670	0.46343428
8D13S317	0.93594104	0.94339041	0.64294426
9D7S820	0.92906746	0.93591004	0.62024462
10THO1	0.89817177	0.90678134	0.54415416
11PentaE	0.97966270	0.98337683	0.80853391
12D16S539	0.92410714	0.92410099	0.58835125
13CSF1PO	0.87337018	0.86933277	0.46963725
14PentaD	0.94720805	0.94939159	0.66195898
15TPOX	0.82667234	0.82783182	0.40801803
Total	>0.99999999	>0.99999999	0.99999944

In conclusion, a Paraguay database has been established for the 15 Powerplex loci. The allelic frequencies of these PCR-based loci can be used to estimate the frequency of a multiple locus DNA profile in the Paraguayan population.

STR, Powerplex™ 16, Paraguay