



# NEW JERSEY STATE POLICE OFFICE OF FORENSIC SCIENCES BULLETIN



## FBI Erratum to the Short Tandem Repeat (STR) Population Database published in 1999 and 2001

The Federal Bureau of Investigation (FBI) Crime Laboratory recently issued a bulletin to National DNA Index System (NDIS) participating laboratories advising them that it had identified errors in the FBI Short Tandem Repeat (STR) population database published in 1999 and 2001, and has subsequently provided amended data correcting these errors. The allele frequencies cited in these publications have been used by most forensic laboratories in the country for calculating DNA match statistics since 1999. The New Jersey State Police Office of Forensic Sciences DNA Laboratory is one of the many laboratories that had utilized the published data for reporting DNA match estimation statistics since beginning STR DNA typing. The original data was published in the peer reviewed Journal of Forensic Sciences 1999;44(6):1277-1286.

The FBI has recently expanded the number of Combined DNA Index System (CODIS) core loci from 13 to 20, which will become mandatory for NDIS labs in 2017. In order to establish allele frequencies for these additional loci, the samples from the original population study were reanalyzed by the FBI using the new STR typing kits that are commercially available to forensic laboratories. The errors were discovered during a concordance check of the new versus originally published data. The errors were determined to be due to clerical mistakes during transcription and to limitation of the older technology and software.

Empirical studies conducted by the FBI, as well as at least two additional laboratories, have shown that the difference in probabilities calculated with the original data compared to that of the amended data is nominal. An erratum notice was published as a Letter to the Editor in the July 2015 issue of the Journal of Forensic Sciences containing the data showing the minimal effect of these errors (Journal of Forensic Sciences, Vol. 60, No. 4, July, 2015).

The New Jersey State Police Office of Forensic Sciences DNA Laboratory reviewed the amended data and has made the necessary corrections to the statistical worksheets used to calculate the DNA match statistics. Any case in progress at the time these changes were approved by OFS management (June 12<sup>th</sup>, 2015) have utilized the updated allele frequencies in the reported calculations.

Any report issued prior to June 12<sup>th</sup> will be re-calculated upon request.

It is important to note that the changes to the population data have no bearing on the conclusions found in the DNA laboratory reports issued prior to this notification regarding inclusion/exclusion of a possible donor to a DNA profile.

Below is the notification received from the FBI regarding the errors found in the allele frequency tables:

### **AMENDMENT OF THE 1999 AND 2001 FBI STR POPULATION DATA**

In the evaluation of original population database samples with the new expanded CODIS core loci, the FBI Laboratory has identified some errors in the data published in the Journal of Forensic Sciences 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. An erratum notice will be published as a Letter to the Editor in the July 2015 issue of the Journal of Forensic Sciences containing the empirical data demonstrating their nominal effect on profile probabilities. The new amended population data will be available at



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FBI.gov (<http://www.fbi.gov/about-us/lab/biometric-analysis/dna-casework-unit-dcu-1>), on the CJIS WAN, and in a future update to Popstats.

Since the development in the late 1990s of the original short tandem repeat (STR) typing systems that included the 13 CODIS core loci, new amplification kits that expand the number of loci to 24 in a multiplex reaction are now commercially available. To establish allele distributions for the additional loci, population samples that were originally genotyped using AmpFISTR Profiler Plus, COfiler, Identifiler (Thermo Fisher Scientific, South San Francisco, CA) and/or GenePrint PowerPlex (Promega Corp., Madison, WI) were retyped using GlobalFiler (Thermo Fisher Scientific) and PowerPlex Fusion (Promega Corp.). For any sample where a given locus is typed with different amplification kits, concordant genotypes should be obtained irrespective of the kit(s) used, with the exception of genotype differences due to rare primer binding site variants and improvements in allelic ladders that expand allele identification capabilities (e.g., an allele may be designated as <11 in one system and as 9 in another).

The FBI Laboratory has identified errors in the data published in the Journal of Forensic Sciences and has submitted erratum notice regarding "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. DNA samples that were used in the published study were recently genotyped again with new commercial products. A concordance assessment of the 1999 and recent data revealed errors in the original data that are attributable to clerical mistakes in transcription of the genotypes and to limitations of the old technology and software.

Erroneous allele frequencies cited in this publication have been used by the FBI and many forensic laboratories for calculating match statistics in criminal investigations and other types of human identification applications since 1999. We are of the view that these discrepancies are unlikely to materially affect any assessment of evidential value. However, given that statistics based on these data have been included in thousands of laboratory reports and testimonies, we believe the discrepancies require acknowledgement and wish to inform on an erratum informing on the existence of these errors, along with the empirical data demonstrating their nominal effect on profile probabilities, which was accepted on March 29, 2015 for publication in the Journal of Forensic Sciences (the journal in which the erroneous data were published) as a Letter to the Editor. According to the current publishing schedule this erratum should appear in the July 2015 issue of the JFS. This issue will be posted on the web at [www.aafs.org](http://www.aafs.org) (for AAFS members) or [www.wiley.com](http://www.wiley.com) (for non-members) in the 60-day period prior to publication of the printed issue. Additionally, amended data will be available at FBI.gov, on the CJIS WAN, and in a future update to Popstats.

If you have any questions, please contact Anthony J. Onorato of the FBI's DNA Support Unit at [Anthony.Onorato@ic.fbi.gov](mailto:Anthony.Onorato@ic.fbi.gov) or 703-632-7572.

Any questions regarding this bulletin and the processing of cases analyzed by the NJSP Office of Forensic Sciences DNA Laboratory should be directed to the DNA Laboratory Director Maureen Low-Ber at 609-584-5054 x5721.