A87 NIST STRBase Resources to Aid Work With New STR Kits and Loci

John M. Butler, PhD, NIST, 100 Bureau Dr, MS 8312, Gaithersburg, MD 20899*

After attending this presentation, attendees will learn about the creation of resources on the STRBase website to aid the understanding of new DNA tests, developed after new short tandem repeat (STR) loci were required for European and U.S. forensic DNA databases.

This presentation will impact the forensic science community by describing online resources under development at the National Institute of Standards and Technology (NIST) that supports work with new DNA tests.

With new short tandem repeat (STR) loci being required for European and U.S. forensic DNA databases, a number of new DNA tests have been developed in the past few years. Attendees will learn what resources exist on the STRBase website to aid their understanding of these new DNA tests.

For the past 15 years, NIST has maintained the Short Tandem Repeat DNA Internet DataBase (STRBase), which is located at http://www.cstl.nist.gov/biotech/strbase. The purpose of STRBase has been and continues to be an attempt to bring together the abundant literature and information in the forensic genetics field in a cohesive fashion in order to make current and future work easier. New materials are regularly added to expand the information contained on the STRBase website.

Information on the STRBase website is contained in hypertext markup language (HTML) files that were created primarily using a editor and website administration tool. Over 1,900 files now exist containing more than 10,000 printed pages of information that are connected with over 5,000 hyperlinks. An additional 2,300 hyperlinks connect various information on STRBase to other internet websites, including over 350 direct links to various organizations, journals, academic and forensic institutes, commercial sites, genetic genealogy labs, parentage testing labs, and legal sites dealing with forensic DNA (see http://www.cstl.nist.gov/biotech/strbase/weblink.htm). Thus, STRBase is not a true searchable "database" but rather a collection of information with interconnected files. Since July 2006, resources that are added to STRBase are now tracked on a "recent updates" page: http://www.cstl.nist.gov/biotech/strbase/updates.htm.

STR fact sheets are the centerpiece of STRBase. These fact sheets list information regarding genomic location, GenBank accession, repeat structure, reported PCR primer sets, observed allele sizes and sequence structure, commercially available allelic ladders, common multiplexes, and mutation rates. All 24 core or common STR loci used in current commercial STR kits are available. Multiplex assay and kits are visually summarized by locus-specific allele size ranges and dye colors with each locus name hyperlinked to the appropriate STR fact sheet. Labs worldwide continue to contribute to knowledge regarding rare alleles such that we now have catalogued over 600 variant alleles and 300 tri-allelic patterns.

Numerous presentation slides, NIST publications and presentations, software programs, and other useful information are available for download and use by the forensic genetics community. Materials from more than 40 recent workshops consisting of thousands of slides covering capillary electrophoresis, low-copy number DNA testing, mixture interpretation, qPCR DNA quantitation, Y-chromosome and mtDNA analysis, and validation are available for use at http://www.cstl.nist.gov/biotech/strbase/training.htm.

NIST's Applied Genetics Group has also updated NIST Standard Reference Material (SRM) 2391c with certified and informational values for commonly used autosomal and Y-STR loci. The information available from NIST's latest SRM will be discussed.

STRBase has been well received and widely used by the forensic DNA community and additional resources for the website continue to be created. In 2005, NIST adopted STRBase as an official Standard Reference Database (SRD) giving further credence to the value of the information contained in the website.

Forensic DNA, STRBase, Internet Resources

 ** Presenting Author*