

## Abstract 2

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### EVALUATION OF ADDITIONAL Y-STR LOCI TO RESOLVE COMMON HAPLOTYPES

**Amy E. Decker, Margaret C. Kline, and John M. Butler**

*National Institute of Standards and Technology, Biochemical Science Division,  
Gaithersburg, MD 20899-8311*

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We are investigating the advantages of additional Y-STR loci beyond those currently available in commercial kits such as Promega's Powerplex Y and Applied Biosystem's Yfiler [1]. The approach for selecting and evaluating these loci is detailed as well as their ability to resolve samples with common types that could not be resolved with the commercial Y-STR kits. A total of 51 additional Y-STRs beyond the 26 loci previously evaluated have been characterized with a subset of U.S population samples. From these studies, 20 Y-STR loci were selected that provided the most forensically useful information such as a large number of alleles. These loci include DYS449, DYS481, DYS492, DYS505, DYS522, DYS527 (a duplicated locus), DYS532, DYS534, DYS570, DYS572, DYS576, DYS607, DYS650, DYS652, DYS709, DYS710, DYS712, DYS715, DYS717, and DYS724. Another added benefit of these additional Y-STRs is their ability to increase the power of discrimination between closely related male individuals, such as fathers and sons. We have examined 400 father:son sample pairs from Caucasian, African American, Hispanic and Asian populations using the 17 Y-STR loci in the Yfiler kit. A total of 19 mutations were observed as well as several duplications and deletions [2]. In addition, we are updating SRM 2395 Human Y-chromosome DNA profiling standard certificate with additional Y-STR loci in order to support the genetic genealogy community which is continually adding new Y-STRs.

Copy of poster available:

[http://www.cstl.nist.gov/biotech/strbase/pub\\_pres/Promega2006\\_Decker.pdf](http://www.cstl.nist.gov/biotech/strbase/pub_pres/Promega2006_Decker.pdf)

REFERENCES [1] Butler, J.M., Decker, A.E., Vallone, P.M., Kline, M.C. (2006) Allele frequencies for 27 Y-STR loci with U.S. Caucasian, African American, and Hispanic samples. *Forensic Sci. Int.* 156:250-260. [2] Butler, J.M., Decker, A.E., Kline, M.C., Vallone, P.M. (2005) Chromosomal duplications along the Y-chromosome and their potential impact on Y-STR interpretation. *J. Forensic Sci.* 50(4): 853-859.