

PowerPlex[®]Y
SPECIFY AND SIMPLIFY



POWER TO SOLVE

FROM SAMPLE TO ANALYSIS



The Power to Solve...from sample to analysis

Each sample, each case is different. Promega is the most recognized source of complete solutions for DNA typing, from sample preparation to STR amplification and detection, and advanced data analysis software. The Promega portfolio of products lets you decide when to employ manual processing or high-throughput automation. Optimized and validated solutions that best fit your laboratory's needs come from Promega and are supported by renowned customer-oriented technical support and training. Based on nearly two decades of innovative global leadership, Promega will continue to expand your power to solve each unique case... from sample to analysis.

The Power of Y-STR Typing

One of the most common challenges analysts face is obtaining probative data from difficult samples recovered from crime scenes. Typically, autosomal STR markers are used to generate genetic profiles from samples submitted to a laboratory. However, there are many situations where interpretation of autosomal STR data may be difficult. The PowerPlex[®] Y System^(a,b) is a male-specific, 12-locus fluorescent short tandem repeat multiplex (Figure 1). It is designed to amplify Y-STR markers, which occur only in males and are inherited through the paternal line. These markers are useful in the interpretation of male/female mixtures, as the female portion does not contribute to the amplified profile.

The Power of Sensitivity

The PowerPlex Y System is now more sensitive than ever before! The system is optimized for use with 0.5ng of DNA; however, each lot is now performance tested to provide reproducible results with 0.1ng of DNA. Additional studies show interpretable results can be obtained with <0.1ng of DNA (Figure 2). The PowerPlex Y System provides the solution for difficult and degraded samples by offering maximum sensitivity with low quantities of DNA.

The STR loci co-amplified at one time with the PowerPlex[®]Y System are:

- DYS391
- DYS389I
- DYS439
- DYS389II

- DYS438
- DYS437
- DYS19
- DYS392

- DYS393
- DYS390
- DYS385a & b

Figure 1. The PowerPlex[®] Y kit contains all loci endorsed by ISFG (International Society of Forensic Genetics), and SWGDAM (Scientific Working Group on DNA Analysis Methods). Box color above is indicative of the dye color used to label the loci.

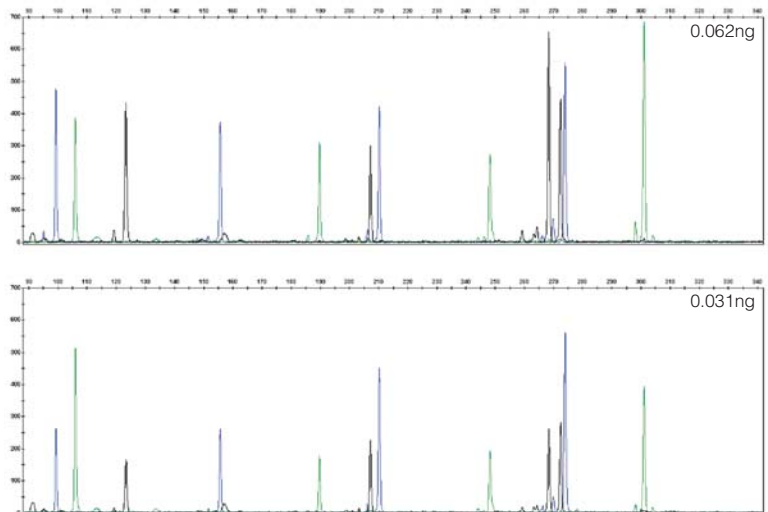


Figure 2. Representative amplifications using the PowerPlex[®] Y System. PowerPlex[®] Y reactions were assembled with decreasing amounts of DNA template, as indicated. The human DNA template was serially diluted in water, and 2.5µl of the dilution was added to each reaction. Amplifications were performed using the GeneAmp[®] PCR System 9700, and 1.0µl of amplification product was analyzed using an Applied Biosystems 3130 Genetic Analyzer, a 3kV, 5-second injection and a run time of 1,800 seconds.

The Power of Specificity

Superior specificity means you amplify only male DNA. Each lot is performance tested to ensure no amplification with up to 100ng of female DNA (Figure 3). Additional studies show no amplification with >100ng of female DNA. Studies performed at Promega have shown that interpretable results can be obtained from male DNA in the presence of excess of female DNA (1:10,000).

The Power of Flexibility

Promega PowerPlex® Systems are designed for use with a variety of genetic analyzers and include Internal Lane Standard 600 and allelic ladders. Both lane standard and allelic ladders are available separately on a custom basis. If you want bulk packaging or just a few kit components, Promega offers the flexibility to provide a solution tailored just for you.

Promega provides panel and bin files for use with GeneMapper® ID software or a PowerTyper™ Macro for use with GenTyper® software. These tools may be downloaded at: www.promega.com/geneticidtools/panels_bins/ and www.promega.com/geneticidtools/powertyper/ respectively.

The Power of Statistics

A match is determined for DNA profiles based on the estimated frequency of occurrence in unrelated individuals within various population groups. Because Y-STR loci are not statistically independent of one another and are co-inherited as extended haplotypes of linked markers, multiplication of single-locus allele frequencies is not appropriate to obtain estimated Y-STR haplotype frequency.

Estimation of the frequency of a particular Y-STR haplotype requires use of a counting method. The power of discrimination depends upon the size of the database used. Promega has developed a resource called the PowerPlex Y Haplotype Database. This is a searchable listing of 12-locus Y-STR haplotypes generated by users of the PowerPlex Y System. See www.promega.com/techserv/tools/pplexy/. The Institute of Legal Medicine, Charité—University Medicine Berlin also maintains a comprehensive European Y-STR database: www.yhrd.org. The PowerPlex Y System is compatible with this and other available haplotype databases.

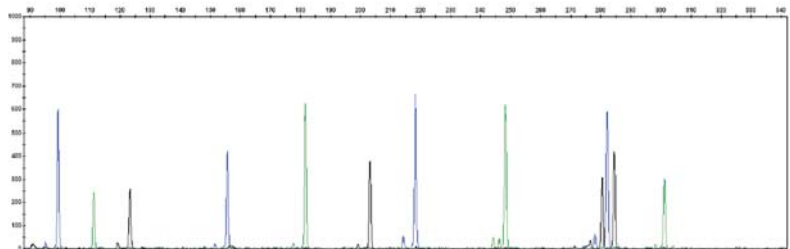


Figure 3. Amplification yield in the absence and presence of female DNA. Male DNA (0.10ng) was amplified in the presence of 100ng female DNA. The amplification products were analyzed using an Applied Biosystems 3130 Genetic Analyzer, a 3kV, 3-second injection and a run time of 1,800 seconds. The spectral calibration was generated using the new PowerPlex® Matrix Standards, 3100/3130 (Cat.# DG4650).

The Power of Compatibility

Proper generation of a spectral calibration file is critical to evaluate multicolor systems. Recent improvements to the manufacturing process for the PowerPlex Y System allow use of a single PowerPlex Matrix Standard per instrument, with one matrix designed for the ABI PRISM® 310 Genetic Analyzer (PowerPlex Matrix Standards, 310, Cat.# DG4640) and one matrix designed for the ABI PRISM® 3100 and 3100-Avant and Applied Biosystems 3130 and 3130x/ Genetic Analyzers (PowerPlex Matrix Standards, 3100/3130 Cat.# DG4650).

The new matrices are compatible across PowerPlex Systems and make it possible to use a single matrix for PowerPlex 16 and PowerPlex Y. Amplified samples from both kits can be run on the same plate on an instrument without changing the matrix.

*The PowerPlex Y System
provides the solution
for difficult and degraded
samples by offering
maximum sensitivity with
low quantities of DNA.*

The Power of Support

Technical specialists are available to visit your laboratory to provide a hands-on overview of Promega products. During their visit, they can set up a matrix on your instrument and ensure that our STR products work reliably in your hands. And when you're ready to validate a new system, Promega offers the Validation Reference Manual to simplify the validation process in your lab. If you need help, technical support is only a phone call or email away: 608-274-4330 or genetic@promega.com.

Numerous reference materials are available for the PowerPlex[®] Y System, including journal reprints, technical manuals and articles describing validation work and concordance studies. This information and more is available for download at:

www.promega.com/techserv/apps/hmnd/

Product Information

Each PowerPlex Y System contains sufficient PowerPlex Y 10X Primer Pair Mix, Gold ST★R 10X Buffer, PowerPlex Y Allelic Ladder Mix, Internal Lane Standard 600, 9948 Male DNA and 9947A DNA for 200 or 50 reactions of 25µl each.

Ordering Information

Product	Size	Cat. #
PowerPlex [®] Y System*	50 reactions	DC6761
	200 reactions	DC6760
PowerPlex [®] Matrix Standards, 310*		DG4640
PowerPlex [®] Matrix Standards, 3100/3130*		DG4650
PowerTyper [™] Macros (Release 2.0)*		DG3470
9948 Male DNA*		DD2061
9947A DNA*		DD1001
Internal Lane Standard 600**		DG2611

* Not for Medical Diagnostic Use.

** For Laboratory Use.

^(a) STR loci are the subject of U.S. Pat. No. RE 37,984, German Pat. No. DE 38 34 636 C2 and other patents issued to the Max-Planck-Gesellschaft zur Förderung der Wissenschaften, e.V., Germany. The development and use of STR loci are covered by U.S. Pat. No. 5,364,759, Australian Pat. No. 670231 and other pending patents assigned to Baylor College of Medicine, Houston, Texas.

Patents for the foundational PCR process, European Pat. Nos. 201,184 and 200,362, expired on March 28, 2006. In the U.S., the patents covering the foundational PCR process expired on March 29, 2005.

^(b) The purchase of this product does not convey a license to use AmpliTaq Gold[®] DNA polymerase. You should purchase AmpliTaq Gold[®] DNA polymerase licensed for the forensic and human identity field directly from your authorized enzyme supplier.

Products may be covered by pending or issued patents or may have certain limitations. Please visit our Web site for more information.

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ABI PRISM, GeneMapper, and Genotyper are registered trademarks of Applied Biosystems Corporation. FSS-i3 is a trademark of The Secretary of State for the Home Department. GeneAmp is a registered trademark of Roche Molecular Systems, Inc.

Differential Extraction

Differex[™] System

Easy separation of sperm and epithelial fractions

DNA Isolation

Slicprep[™] 96 Device

Disposable device for high-throughput sample processing directly from solid supports

DNA IQ[™] System

Manual or automated purification of DNA free of PCR inhibitors

Maxwell[®] 16 System

A compact, plug-and-play instrument for automated DNA extraction

Human-Specific Quantification

Plexor[™] HY System

Quantitative PCR with both human and Y-chromosome DNA in a single reaction

Amplification and STR Analysis

PowerPlex[®] 16 System

Highly sensitive single amplification of 16 loci (including 13 CODIS loci)

PowerPlex[®] Y System

Male-specific STR genotyping kit endorsed by ISFG and SWGDAM

PowerPlex[®] ES System

Kit meets ENFSI requirements for European genotyping

PowerPlex[®] S5 System

A sensitive mini STR screening kit for difficult samples

Data Analysis and Reporting

FSS-i3[™] Expert Systems Software

Automated STR data review and mixture analysis



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Promega

www.promega.com

The Power of Support

Technical specialists are available to visit your laboratory to provide a hands-on overview of Promega products. During their visit, they can set up a matrix on your instrument and ensure that our STR products work reliably in your hands. And when you're ready to validate a new system, Promega offers the Validation Reference Manual to simplify the validation process in your lab. If you need help, technical support is only a phone call or email away: 608-274-4330 or genetic@promega.com.

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