

PowerPlex[®] 16



POWER TO SOLVE

FROM SAMPLE TO ANALYSIS



Promega



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 STR Typing

The PowerPlex® 16 System is the original single amplification STR product to type all 13 CODIS core loci. Now, the original system is even better. Enhanced manufacturing processes have improved spectral performance and lot-to-lot consistency. The improved product is coupled with new matrices, which are compatible with the ABI PRISM® 310, 3100 and 3100-*Avant* Genetic Analyzers and Applied Biosystems 3130 and 3130*xl* Genetic Analyzers.

The Power of Sensitivity

Difficult and degraded samples are a challenge for the forensic laboratory. The PowerPlex 16 System provides the solution for these sample types by offering maximum sensitivity with low quantities of DNA. It is optimized for use with 1ng of DNA; however, each lot is performance tested to provide reproducible results with as little as 0.2ng of DNA. Additional studies show interpretable results can be obtained with much less than 0.2ng of DNA.

Figure 2. DNA from an individual heterozygous at all 15 autosomal loci was extracted using the DNA IQ™ System and quantitated using Picogreen® reagent. This DNA was diluted to 3.125pg/μl and 50 pg/μl, and 10μl of each concentration was amplified separately in a 25μl PowerPlex® 16 amplification reaction for 32 cycles using a Perkin-Elmer GeneAmp® PCR System 9700 thermal cycler. Amplified fragments were size-separated on an Applied Biosystems 3130 Genetic Analyzer with 3kV, 5-second injections and analyzed using GeneMapper® ID software, version 3.2, with an analysis threshold of 50 RFU. **Panel A.** The electropherogram resulting from the amplification of 500pg (0.5ng) of DNA. **Panel B.** The electropherogram resulting from the amplification of 31.25pg of DNA. Of the total of 30 alleles observed with 500pg of DNA (Panel A), 27 were also detectable above the analysis threshold with 31.25pg of DNA (Panel B).

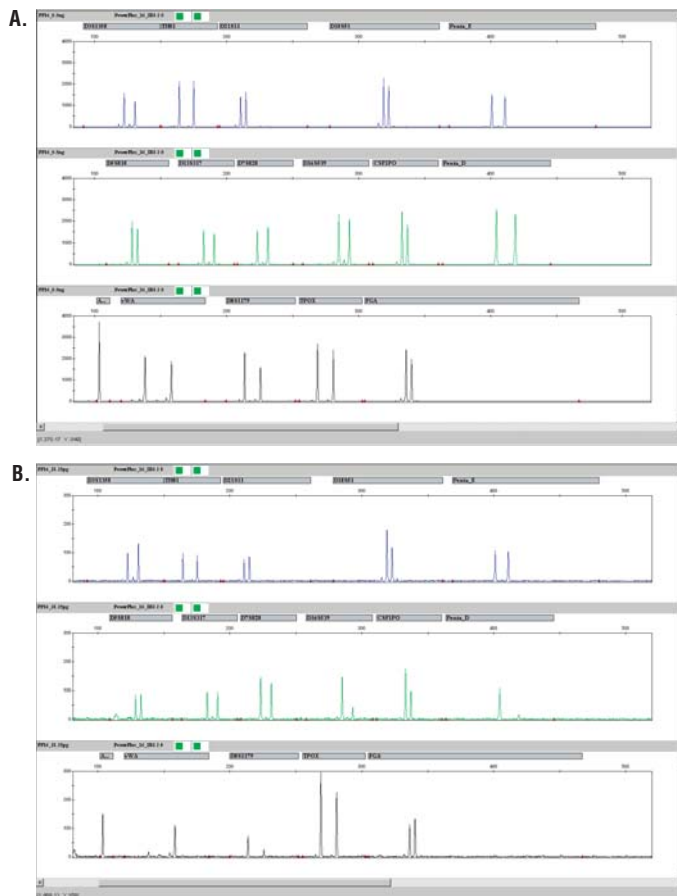
The STR loci co-amplified at one time with the PowerPlex® 16 System are:

- D3S1358
- TH01
- D21S11
- D18S51
- Penta E

- D5S818
- D13S317
- D7S820
- D16S539
- CSF1PO
- Penta D

- Amelogenin
- vWA
- D8S1179
- TPOX
- FGA

Figure 1. The unique Penta loci are only available from Promega. Box color above is indicative of the dye color used to label the loci.



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The Power of Discrimination

The PowerPlex® 16 System offers superior power of discrimination. The loci included in the system have been selected because they satisfy the needs of several major standardization bodies throughout the world, including INTERPOL, ENFSI, GITAD and the FBI.

PowerPlex 16 also contains two low-stutter, highly polymorphic pentanucleotide repeat loci, Penta E and Penta D. These loci add significantly to the discrimination power of the system. The low stutter seen with Penta E and Penta D makes them ideal loci for evaluation of DNA mixtures often encountered in forensic casework. Finally, the Amelogenin locus is included to allow gender identification of each sample.

The Power of Flexibility

The PowerPlex 16 System is designed specifically for use with a variety of genetic analyzers and includes both Internal Lane Standard 600 and allelic ladders. The Internal Lane Standard 600 and allelic ladders are sold separately. 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 Genotyper® software. These tools may be downloaded at:

www.promega.com/geneticidtools/panels_bins/

www.promega.com/geneticidtools/powertyper/

	African-American	Caucasian-American	Hispanic-American	Asian-American
Matching Probability	1 in 1.41 x10 ¹⁸	1 in 1.83 x10 ¹⁷	1 in 2.93 x10 ¹⁷	1 in 3.74 x10 ¹⁷
Typical Paternity Index	2,510,000	1,520,000	522,000	4,110,000
Power of Exclusion	0.9999996	0.9999994	0.9999983	0.9999998

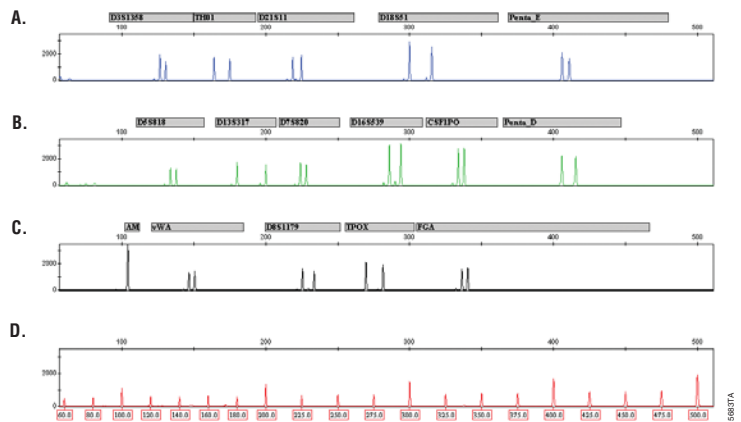


Figure 3. The PowerPlex® 16 System. A single template DNA (1.0ng) was amplified using the PowerPlex® 16 10X Primer Pair Mix. The amplification products were mixed with the Internal Lane Standard 600 and analyzed with an Applied Biosystems 3130 Genetic Analyzer using a 3kV, 5-second injection. The results were analyzed using GeneMapper® ID software, version 3.2. **Panel A.** An electropherogram showing the peaks of the fluorescein-labeled loci: D3S1358, TH01, D21S11, D18S51 and Penta E. **Panel B.** An electropherogram showing the peaks of the JOE-labeled loci: D5S818, D13S317, D7S820, D16S539, CSF1PO and Penta D. **Panel C.** An electropherogram showing the peaks of the TMR-labeled loci: Amelogenin, vWA, D8S1179, TPOX and FGA. **Panel D.** An electropherogram showing the 60bp to 500bp fragments of the Internal Lane Standard 600.

Type difficult DNA samples with confidence. The PowerPlex 16 System delivers sensitive and robust STR results in a single amplification.

The Power of Support

A casework validation study was completed with the cooperation of more than 20 laboratories. Over 2,000 samples were typed by multiple CODIS laboratories to complete the required CODIS database validation. In addition, the improved PowerPlex 16 System has been approved for use in the National DNA Index System (NDIS).

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 Guide to simplify the validation process in your lab. If you need help, technical support is only a phone call away.

Product Information

Each PowerPlex 16 System contains sufficient PowerPlex 16 10X Primer Pair Mix, Gold ST★R 10X Buffer, PowerPlex 16 Allelic Ladder Mix, Internal Lane Standard 600 and 9947A DNA for 100 or 400 reactions of 25µl each.

Ordering Information

Product	Size	Cat. #
PowerPlex 16 System ^(a-d)	400 reactions	DC6530
	100 reactions	DC6531
PowerPlex Matrix Standards, 310		DG4640
PowerPlex Matrix Standards, 3100/3130		DG4650
PowerTyper Macros (Release 2.0)		DG3470
9947A DNA		DD1001
Internal Lane Standard 600		DG2611
Fluorescent Ladder (CXR), 60-400 Bases		DG6221

Reference information including article reprints, technical manuals, population statistics and more are available at: www.promega.com/techserv/apps/hmndid

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

Automatable 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

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

^(b) U.S. Pat. Nos. 6,238,863 and 6,767,703 and other patents pending.

^(c) U.S. Pat. Nos. 5,843,660, 6,479,235, 6,221,598 and 7,008,771, Australian Pat. No. 724531, Canadian Pat. No. 2,118,048 and other patents and patents pending.

^(d) 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.



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