



Molecular Solutions for Clinical Laboratories

Bringing Efficiency to Your Workflows



An Expert Partner You Can Rely On

More than a supplier — a partner

Our quality solutions for clinical labs include:

- A full selection of products and custom materials that support your workflow from nucleic acid extraction (automated or manual) to gene amplification.
- Automated nucleic acid extraction for clinical research labs performing genetic testing, HLA typing, immunology, hematology, oncology, pathology and infectious disease analysis.
- In-depth expertise in basic research, molecular biology applications and forensic DNA analysis.
- A commitment to the highest quality standards:
 - ISO 13485 compliant.
 - Expanding cGMP manufacturing capabilities.
- Branches in 15 countries and partnerships with over 50 distributors worldwide.





Promega Corporation has strong core capabilities and strengths in molecular biology applications. We offer more than 2,000 products that enable scientists worldwide to advance their knowledge in molecular diagnostics, life science research and human identification.



Nucleic Acid Extraction for the Clinical Lab

The reduced hands-on time and increased throughput from automated nucleic acid extraction with Maxwell® 16 simplify your workflow and free up your time for other tasks.

Save Time and Reduce Costs with Maxwell[®] 16

Reliable

The robust operation, UV decontamination and comprehensive service and support options bring dependability to your day-to-day operations.

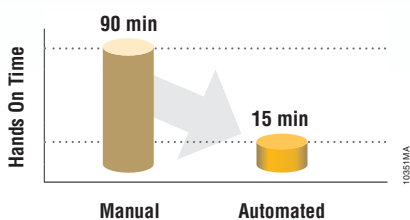
Simple

The touch-screen operation and pre-loaded protocols simplify instrument programming. Prefilled reagent cartridges are available for a variety of sample types including blood, serum, plasma, cells and fresh/frozen FFPE tissue samples.

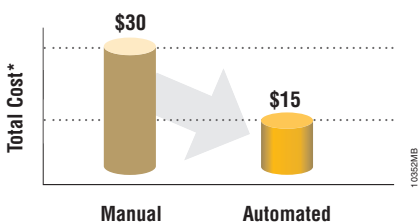
Rapid

Simply add your samples to the prefilled cartridge, place the cartridge in the instrument and press "Start". Automated extraction of 1–16 samples is complete in 30–45 minutes. The bar-code scanning capability allows for sample tracking during the run.

6X Less Hands-On Time



Reduce Extraction Process Cost by 50%



*Total cost = reagent price + technician time



Reliable Extraction for Consistent Results

Today's HLA/Transplant Lab needs reliable DNA extraction for genetic-based testing. Consistent yield and purity are important. Maxwell® 16 provides reliable, reproducible extraction of genomic DNA from blood, buffy coat, swabs or tissue samples.

Why Maxwell® 16 for an HLA/Transplant Lab?

An HLA Lab was using manual column-based DNA extraction methods, but was frustrated by the hands-on time and labor required.

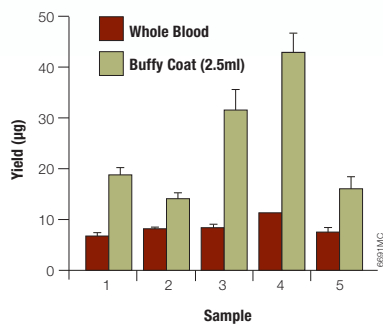
Increasing sample volume strains lab capabilities.

Adoption of new technologies and keeping up with new alleles pushed the lab to work faster. Labor-intensive manual protocols led to variable results and errors for less experienced technologists.

Maxwell® 16 provides the solution.

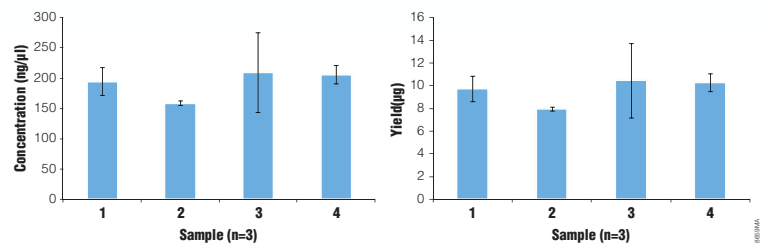
Implementing automation reduced DNA extraction time from 16 hours to less than 4 hours per week with improved consistency and higher yields. Errors were reduced, and technologists were able to do more work with renewed confidence.

High Yield



Yield of DNA extracted by Maxwell® 16 from 400µl whole blood or 250µl buffy coat obtained from 2.5ml of whole blood.

Consistency



DNA Yield and concentration from blood samples obtained from 4 individual donors. 300µl of whole blood was processed with the LEV Blood DNA Kit. Three replicates were performed from each donor sample.

Simple Extraction for Higher Efficiency

Today's Molecular Pathology Lab needs automated nucleic acid extraction methods that provide high-quality nucleic acid for downstream assays. Maxwell® 16 provides reduced turnaround time and faster, more reliable processing of fresh/frozen FFPE tissue samples.

Why Maxwell® 16 for a Molecular Pathology Lab?

A Molecular Pathology Lab could not consistently amplify PCR products from DNA manually extracted from FFPE tissue.

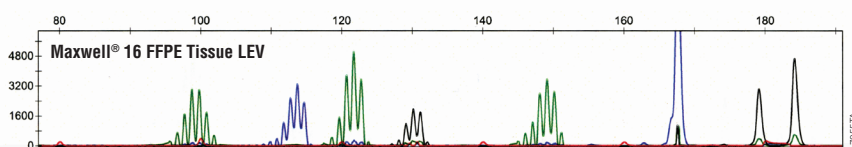
Organic solvents and labor-intensive processing limit efficiency.

Traditional home-brew organic DNA extraction methods limited lab productivity, unnecessarily exposed technologists to hazardous chemicals and gave poor yields, leading to PCR failure.

Maxwell® 16 provides the solution.

Implementing automation improved the quality of DNA recovered. More PCR amplifications provided usable data, and technologists were happier not having to work with xylene and other hazardous organic solvents.

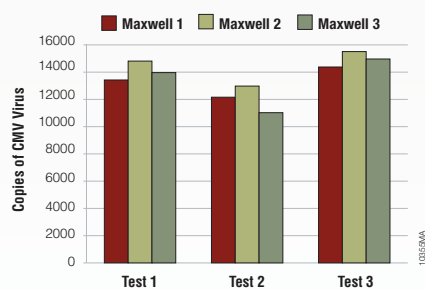
Better Results



Multiplex-PCR amplification of microsatellite alleles from human DNA purified from FFPE tissue using Maxwell® 16.

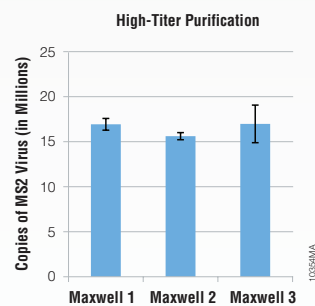
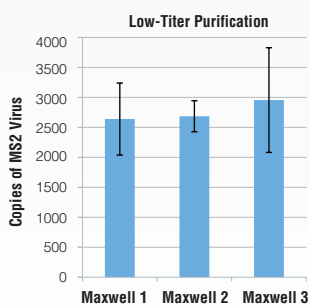


Consistent Yield



Viral DNA purified from low-titer human CMV Virus samples with the Maxwell® 16 Viral Total Nucleic Acid Purification Kit.

Blood Purification Range



Viral RNA purified from MS2 samples with the Maxwell® 16 Viral Total Nucleic Acid Purification Kit.



Confident Operation

Comprehensive support and service.

Promega provides flexible service and support options so that you can always experience the benefits of Personal Automation™. Technical support is provided by a global team of technical services scientists, field support scientists and service engineers. Warranties and service plans give you peace of mind, ensure minimal instrument downtime and provide predictable service costs.

Accurate and thorough documentation of instrument performance.

Promega offers Installation Qualification, Operational Qualification and Preventive Maintenance services to ensure smooth operation. These services help assure adequate training and documentation of performance characteristics.



Ordering Information

Maxwell® 16 Instrument and Extraction Kits

Product	Size	Cat#
Maxwell® 16 MDx Instrument	1 each	AS3000
Maxwell® 16 Blood DNA Purification Kit	48 preps	AS1010
Maxwell® 16 LEV Blood DNA Kit	48 preps	AS1290
Maxwell® 16 Buccal Swab LEV DNA Purification Kit	48 preps	AS1295
Maxwell® 16 FFPE Plus LEV DNA Purification Kit	48 preps	AS1135
Maxwell® 16 Cell DNA Purification Kit	48 preps	AS1020
Maxwell® 16 Cell LEV DNA Purification Kit	48 preps	AS1140
Maxwell® 16 Tissue DNA Purification Kit	48 preps	AS1030
Maxwell® 16 LEV simplyRNA Cells Kit	48 preps	AS1270
Maxwell® 16 LEV simplyRNA Tissue Kit	48 preps	AS1280
Maxwell® 16 LEV simplyRNA Blood Kit	48 preps	AS1310
Maxwell® 16 Viral Total Nucleic Acid Purification Kit	48 preps	AS1150

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Maxwell® 16 Warranty and Service Options

Product	Size	Cat#
Maxwell® 16 Premier Warranty	1 each	SA2000
Maxwell® 16 Standard Service Agreement	1 each	SA2010
Maxwell® 16 Premier Service Agreement	1 each	SA2015
Maxwell® 16 Preventative Maintenance	1 each	SA2020
Maxwell® 16 Installation Qualification	1 each	SA1001
Maxwell® 16 Operational Qualification	1 each	SA1011
Maxwell® 16 Installation and Operational Qualification	1 each	SA1021

Maxwell® 16 Instrument Specifications

Processing Time	30–45 minutes (depending on sample type and method)
Number of Samples	up to 16
Elution Volume	50–300µl
Weight	42.7lb (19.4kg)
Dimensions.....	12.8W x 17.3D x 12.9H inches (33W x 44D x 33H cm)
Power Requirements.....	100–240VAC, 50–60Hz, 2.1A
Regulatory Compliance.....	General Purpose Medical Device (US only)





Amplification

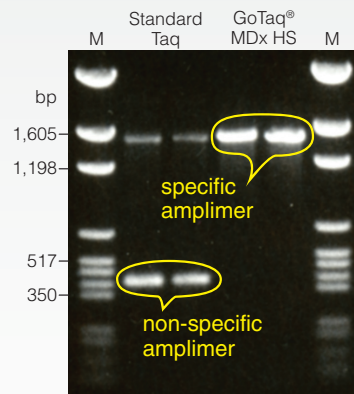
Precision
Performance
Sensitivity

Promega has over 30 years of expertise delivering reagents to life science and clinical laboratories. All amplification reagents are designed to meet the needs of complex PCR methods and are thoroughly tested to ensure optimal performance.

Proven Amplification for Diagnostic Applications

GoTaq® MDx Hot Start Polymerase brings the proven robust amplification of GoTaq® Hot Start Polymerase to diagnostic and clinical labs.

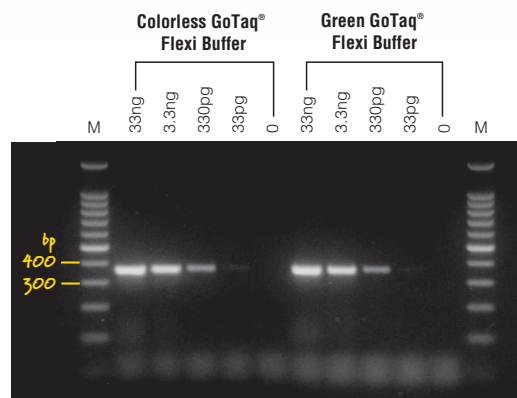
- Room-temperature reaction set-up for convenient handling.
- Faster results with a two-minute enzyme activation.
- Better yield, sensitivity and specificity with an antibody hot start.
- Custom formats for your specific needs.
- High-quality product for integration into LDTs and homebrew assays.
- No extra royalty and licensing costs for clinical applications.



Comparison of amplification reactions using standard Taq DNA Polymerase and GoTaq® MDx Hot Start Polymerase with Colorless GoTaq® Flexi Buffer or with Green GoTaq® Flexi Buffer.

Master Mixes save time and reduce the risk of error:

GoTaq® Colorless Master Mix and GoTaq® Green Master Mix are premixed, ready-to-use 2X solutions containing GoTaq® DNA Polymerase, dNTPs, MgCl₂ and reaction buffers at optimal concentrations for efficient amplification.

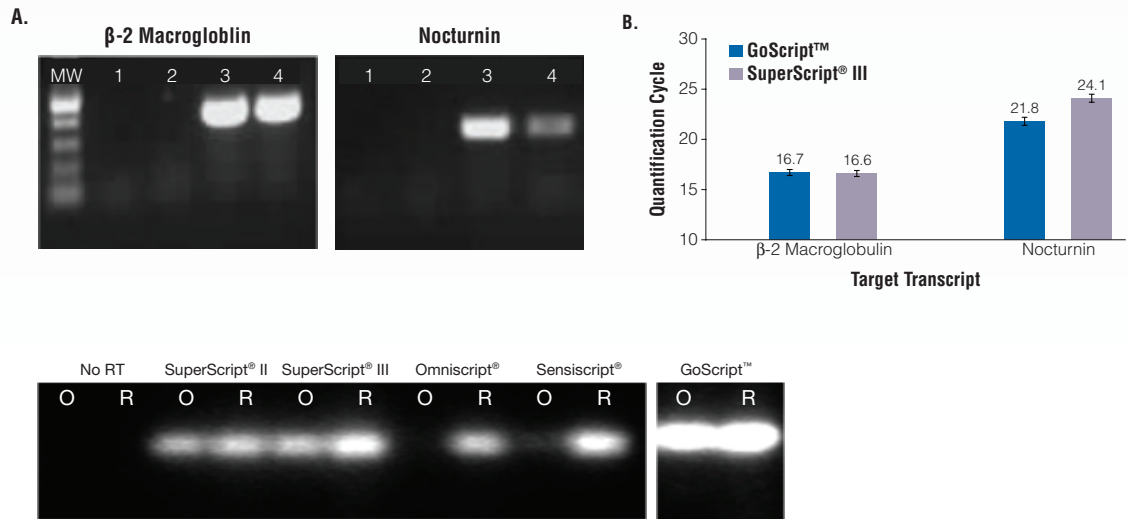


Higher sensitivity at room temperature. A 360bp fragment of the $\alpha 1$ antitrypsin gene was amplified using GoTaq® MDx Hot Start Polymerase with Colorless or Green GoTaq® Flexi Buffer and the indicated amount of Human Genomic DNA. All reactions were set up at room temperature and placed in a room-temperature thermal cycler before starting the cycling protocol. Lane M, Benchtop 100bp Ladder.

Sensitive and Efficient Reverse Transcriptases

GoScript™ Reverse Transcriptase utilizes M-MLV and state-of-the-art buffer technology designed for qPCR to deliver robust, reliable cDNA synthesis of a full range of rare and abundant transcripts, even in the presence of inhibitors.

- Saves money on each reaction.
- Detects rare RNA transcripts.
- Synthesizes cDNA in the presence of strong inhibitors.



Total human RNAs were transcribed using oligo (dT) (O) or random primers as recommended by the manufacturer. The cDNA was then analyzed by PCR using GoTaq® Green Master Mix (Cat# M7122) with primers for an amplicon of 940bp at the 5' end of the transcript of 8.9kb APC. The results of three separate experiments are shown. No RT; control reaction without reverse transcriptase.

Ordering Information

GoTaq® DNA Polymerase

Product	Size	Cat#
GoTaq® MDx Hot Start Polymerase	100u	D6001
	500u	D6005
	2500u	D6006
	10000u	D6008
GoTaq® DNA Polymerase	100u	M3001
	500u	M3005
	2500u	M3008
GoTaq® Flexi DNA Polymerase	100u	M8291
	500u	M8295
	2500u	M8296
	5000u	M8297
	10000u	M8298

Master Mixes

GoTaq® Colorless Master Mix and GoTaq® Green Master Mix are premixed, ready-to-use 2X solutions containing GoTaq® DNA Polymerase, dNTPs, MgCl₂, and reaction buffers at optimal concentrations for efficient amplification.

Product	Size	Cat#
GoTaq® Green Master Mix	100 reactions	M7122
	100 reactions	M7123
GoTaq® Colorless Master Mix	100 reactions	M7132
	100 reactions	M7133

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Reverse Transcriptases

Product	Size	Cat#
GoScript™ Reverse Transcriptase	100 reactions	A5003
	500 reactions	A5004
GoScript™ Reverse Transcription System	50 reactions	A5000
	100 reactions	A5001

dNTPs

Dependable, PCR-tested deoxynucleotides supplied at a concentration of 100mM in water for ease-of-use in PCR and other applications.

Product	Size	Cat#
dNTP Mix	200µl 10mM	U1511
	1000µl 10mM	U1515
Set of dATP, dCTP, dGTP, dTTP	40µmol each	U1240
	10µmol each	U1330
	200µmol each	U1410
	25µmol each	U1420

Related Products

RNasin®

Product	Size	Cat#
Recombinant RNasin® Ribonuclease Inhibitor	2500u	N2511
	10000u	N2515
RNasin® Plus RNase Inhibitor	2500u	N2611
	10000u	N2615



Applications for Clinical Research

Genetic analysis is a powerful tool for characterizing genetic or chromosomal mutations, which may be associated with diseases such as cancer or diabetes.

Genetic Markers for Microsatellite Instability

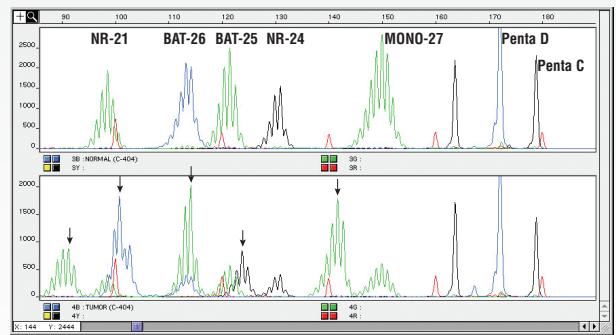
The **MSI Analysis System** is a fluorescent multiplex PCR-based method for detection of microsatellite instability (MSI), a form of genomic instability. This instability is due to either insertion or deletion of repeating units during DNA replication and failure of the mismatch repair system (MMR) to correct these errors.

MSI analysis typically involves comparing allelic profiles of microsatellite markers generated by amplification from matching pairs of test samples that may be MMR-deficient and normal tissue samples. New alleles in the test sample not found in the corresponding normal sample indicate the presence of MSI. MSI analysis can be used as a screening method to help researchers studying the mechanisms of cancer development.

- Understand the Complete MSI Phenotype: A single multiplex PCR amplifies five informative mononucleotide repeat markers for improved sensitivity.
- Have Confidence in Sample Identification: Co-amplification of highly polymorphic pentanucleotide repeats provides internal sample tracking.
- Get Consistent Data Analysis: MSI panels and bins for GeneMapper® 4.0 software for data analysis.

Applications

- Research on genomic instability in cancer.
- Research on the mismatch repair deficiencies in cancer development.



Microsatellite instability assays using the MSI analysis system. Matching normal sample (top panel) and MSI-positive test samples (bottom panel) were analyzed using the MSI Analysis System 1.2.

Marker	Repeat	Size (bp)	Primer Dye	Sensitivity
NR-21	(A)21	94-101	JOE	99%
BAT-26	(A)26	103-115	FL	93%
BAT-25	(A)25	114-124	JOE	96%
NR-24	(A)24	130-133	MR	92%
MONO-27	(A)27	142-154	JOE	98%
Penta C	(AAAAG)3-15	143-194	TMR	-
Penta D	(AAAAG)2-17	135-201	FL	-

The MSI Analysis System Locus Information.

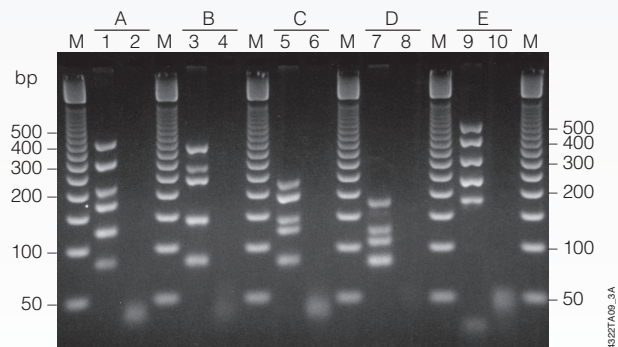
Standardized Amplification for Y Chromosome Analysis

The **Y Chromosome Deletion Detection System, Version 2.0**, provides a standardized screening panel for nonpolymorphic sequence tag sites (STS) on the human Y chromosome. The system amplifies key functional regions associated with AZoospermia Factor (AZF) (i.e., the regions that flank AZFa and cover AZFb, AZFc, AZFd including DAZ, KAL-Y, SMCY) and flanking loci for other key spermatogenesis-related genes (i.e., RBM1, DFFRY and DBY).

- Easy to Use: Premixed Multiplex Master Mixes contain 20 primer pairs, includes internal controls to provide a standardized panel of results.
- Improved Formulation: Use of GoTaq® DNA Polymerase minimizes dropouts.
- Complete System: All required reagents are provided in the kit.

Application

- Detection of specific regions of the human Y chromosome.



Multiplex analysis of wildtype male genomic DNA. Amplification of male genomic DNA (MD115A) (lanes 1, 3, 5, 7, 9), as well as a negative DNA control (lanes 2, 4, 6, 8, 10), for each of the five Multiplex Master Mixes in the Y Chromosome Deletion Detection System.

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Ordering Information

Product	Size	Cat#
MSI Analysis System, Version 1.2	100 reactions (50 pairs reactions)	MD1641
Y Chromosome Deletion Detection System, Version 2.0	25 reactions	MD1531
PowerPlex® 21 System	200 reactions	DC8902
PowerPlex® 18D System	200 reactions	DC1802
PowerPlex® 16 HS System	100 reactions	DC2101
	400 reactions	DC2100

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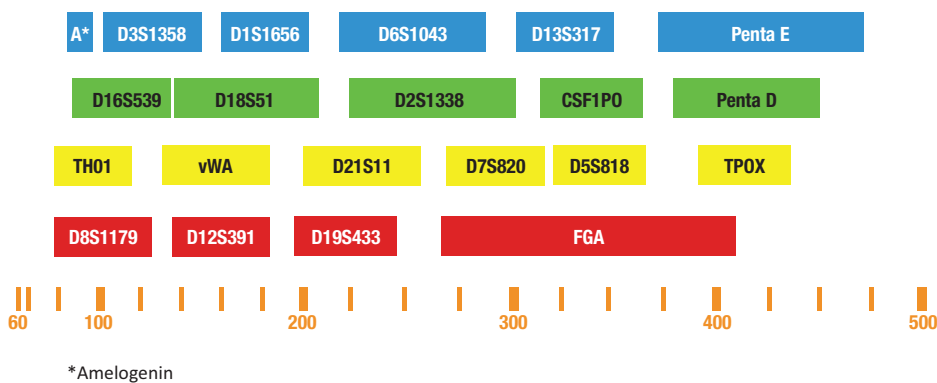
Gold Standard Assays for STR Markers

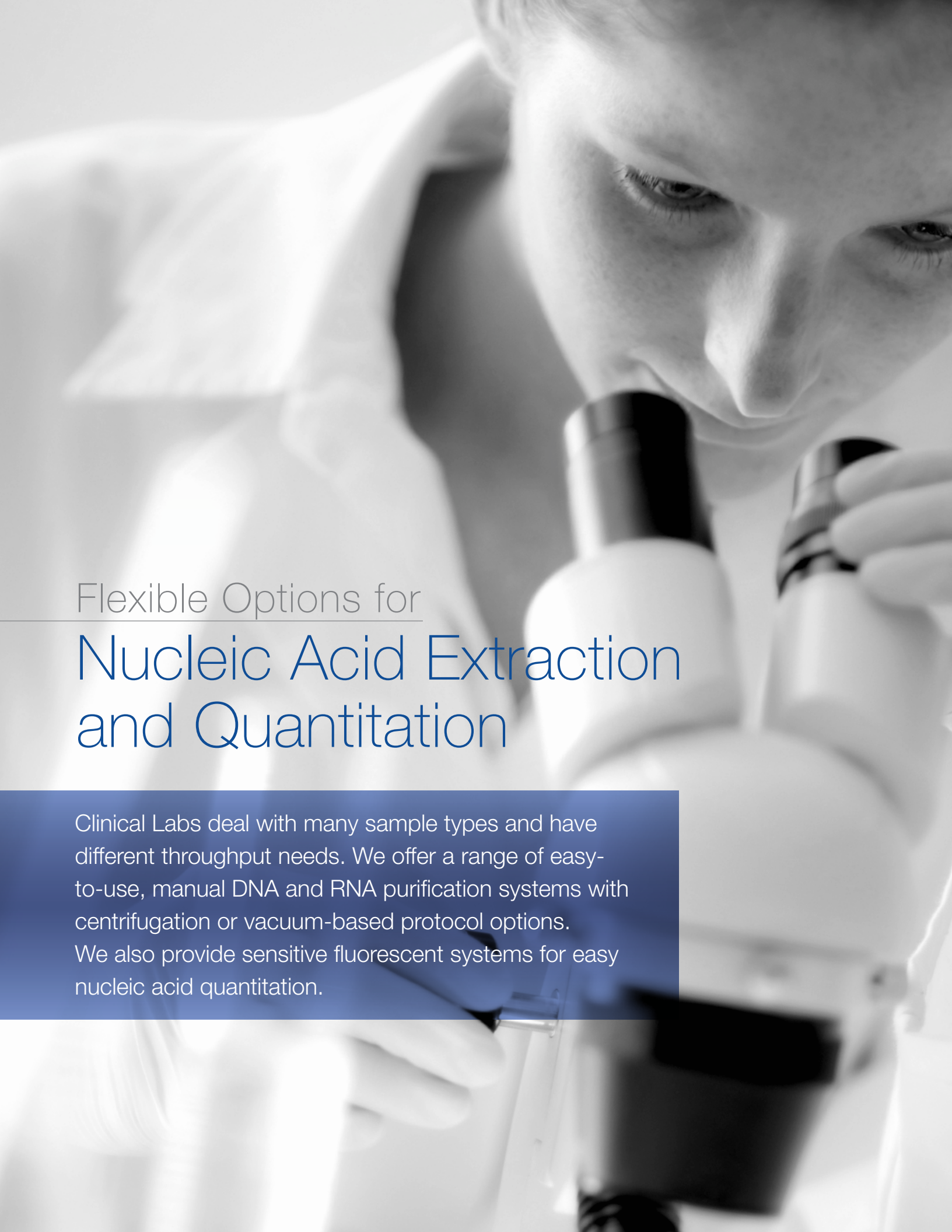
The **PowerPlex® 21 System** is a multiplex STR system for use in DNA typing, including paternity testing, forensic DNA analysis, human identity testing and specimen identification. The system allows co-amplification and 5-color detection of 21 loci (20 STR loci and Amelogenin). The PowerPlex® 21 System is compatible with the ABI PRISM® 3100 and 3100-*Avant* Genetic Analyzers and Applied Biosystems 3130, 3130*xl*, 3500 and 3500*xL* Genetic Analyzers for Human Identification.

- One Amplification Reaction: Amplify 21 loci in one reaction with a simple master mix format.
- High Power of Discrimination: The 21 loci offer more choices for resolving closely matched samples.
- High Efficiency: 90-minute PCR time is the shortest among other competitor systems.
- Dependability: High inhibitor tolerance ensures success.
- Sensitivity: Each lot is quality tested to produce a full profile with 100pg of DNA.
- Convenience: Direct-amplification compatibility to save time and labor when using FTA card punches.

Applications

- Specimen Identification
- Human Tissue Databasing/
Provenance Testing
- Paternity and Relationship Testing
- Maternal Cell Contamination
- Fetal Sex Determination
in Early Pregnancy
- Twin Zygosity Testing





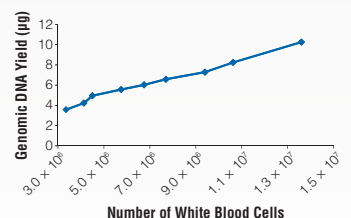
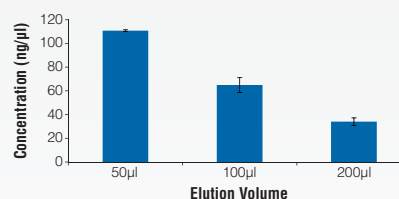
Flexible Options for
Nucleic Acid Extraction
and Quantitation

Clinical Labs deal with many sample types and have different throughput needs. We offer a range of easy-to-use, manual DNA and RNA purification systems with centrifugation or vacuum-based protocol options. We also provide sensitive fluorescent systems for easy nucleic acid quantitation.

Maximum Yield, Minimal Processing Time

ReliaPrep™ Blood and Tissue gDNA Miniprep Systems

- Easy to Use: Reagents are supplied ready to go; no additions required.
- Save Time: Eluted DNA obtained in 30 minutes or less.
- No Ethanol: Eliminates alcohol inhibition and carryover.
- Pure gDNA: Improved A_{260}/A_{230} ratios vs. the leading competitor.
- Peace of Mind: Consistent results from run to run and between users, even with hemolyzed samples.
- Concentrated DNA: Good recovery and purity in as little as 50 μ l elution.



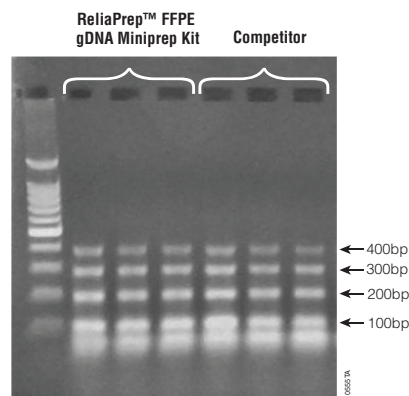
Genomic DNA yield varies with white blood cell count. Whole blood was obtained from several individuals, and white cell counts were determined using a hemocytometer. Two hundred microliters of blood was used for genomic DNA purification ($n = 3$ or 4), and the amount of isolated gDNA was quantitated by absorbance spectroscopy.

Quality Nucleic Acid from FFPE Tissues

ReliaPrep™ FFPE gDNA and RNA Miniprep Systems

Purify high quality, intact nucleic acids from FFPE tissue without harsh solvents or overnight digestions.

- Isolate Quality, Intact gDNA: Optimized lysis and binding conditions reverse modifications introduced by the fixation process, resulting in intact, amplifiable gDNA.
- Safely Deparaffinize Your Sample: Deparaffinization step occurs without harsh organic solvents.
- Save Time: Purify gDNA from FFPE tissue in less than 2.5 hours with minimal hands-on time. No overnight digestion required.
- Easy to Use: Minimal preparation time; simply add ethanol and go!



Comparison of purified DNA integrity from ReliaPrep™ FFPE gDNA Miniprep System and a competitor by multiplex PCR of variable length fragments of the GAPDH gene from 10 μ m slices of FFPE human liver. 10 μ l of purified DNA was used as a template for PCR.

Ordering Information

Product	Size	Cat#
ReliaPrep™ FFPE gDNA Miniprep System*	10 preps	A2351
	100 preps	A2352
ReliaPrep™ FFPE Total RNA Miniprep System**	10 preps	Z5001
	100 preps	Z5002
ReliaPrep™ Blood gDNA Miniprep System**	100 preps	A5081
	250 preps	A5082
ReliaPrep™ gDNA Tissue Miniprep System**	100 preps	A2051
	250 preps	A2052

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RT-qPCR

Product	Size	Cat#
GoTaq® qPCR Master Mix	200 reactions (5 x 1 ml)	A6001
	1000 reactions (25 x 1 ml)	A6005
GoTaq® 2-Step RT-qPCR System	50 RT reactions + 200 qPCR reactions	A6010
GoTaq® 1-Step RT-qPCR System	200 reactions	A6020

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Related Products

Application	Product	Size	Cat#
One-step RT-PCR	Access RT-PCR System	20 reactions	A1260
		100 reactions	A1250
		500 reactions	A1280
	AccessQuick™ RT-PCR System	20 reactions	A1701
		100 reactions	A1702
		500 reactions	A1703

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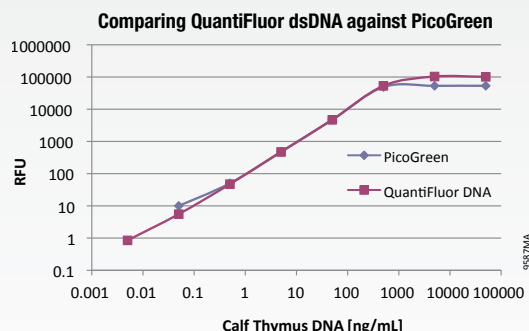
Application	Product	Size	Cat#
Reverse Transcription	ImProm-II™ ReverseTranscription System	100 reactions	A3800
		10 reactions	A3801
	ImProm-II™ Reverse Transcriptase	100 reactions	A3802
		500 reactions	A3803
	M-MLV Reverse Transcriptase	10000u	M1701
		50000u	M1705

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Sensitive Quantitation of DNA and RNA

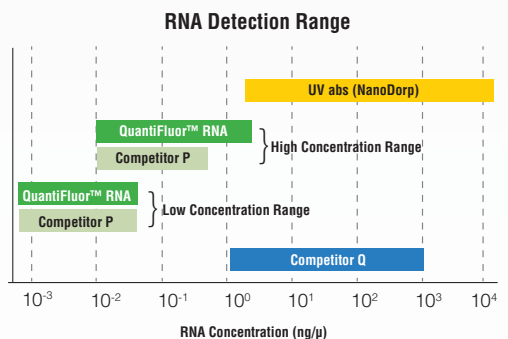
QuantiFluor™ dsDNA System

- High Specificity: Highly specific binding to dsDNA; minimal binding to ssDNA, RNA, protein and interfering compounds.
- Increased Sensitivity: Significantly more sensitive than absorbance at 260nm (NanoDrop® spectrophotometer) for low-concentration samples. Performs better or equal to PicoGreen® dye, and has a detection limit of 50pg/ml.



QuantiFluor™ RNA System

- Increased Sensitivity: Significantly increased sensitivity over absorbance at 260nm (NanoDrop®) for low-concentration samples.
- Uses Less Sample: Less template RNA required than spectrophotometry.
- Easy Setup: System includes all the necessary reagents to quickly set up and quantitate RNA.
- Cost-Effective: Value priced for those customers who are cost-conscious and budget-constrained.



Ordering Information

Product	Size	Cat#
QuantiFluor™ dsDNA System	1ml	E2670
QuantiFluor™ RNA System	1ml	E3310
QuantiFluor™ ST Handheld Fluorometer	1 each	E6090

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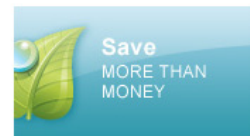
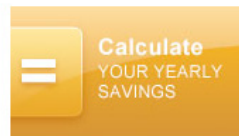
Helix™



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