

End-Point PCR

MasterAmp™ Extra-Long PCR Kit

The MasterAmp™ Extra-Long PCR Kit is a complete system for successful and accurate optimized amplification of DNA sequences from 20 kb to about 40 kb. The MasterAmp Extra-Long DNA Polymerase Mix combines MasterAmp Taq DNA Polymerase with a 3'→5' proofreading enzyme, to achieve PCR fidelity at least three times higher than Taq DNA polymerase alone. The Kit also contains nine MasterAmp Extra-Long PCR 2X PreMixes with dNTPs, buffer, and varying amounts of MgCl₂ and the MasterAmp PCR Enhancer for instant optimization of the reaction conditions. The MasterAmp Extra-Long PCR Kit is a perfect choice for genome analysis with next-generation sequencing technology, as it eliminates the need for tedious cloning steps.

Catalog No.	Size
MHF9220	50 reactions
<i>Contents: MasterAmp Extra-Long PCR PreMixes 1-9, MasterAmp Extra-Long DNA Polymerase Mix, Control Lambda DNA/Primers</i>	

FailSafe™ PCR PreMix Selection Kit

The FailSafe™ PCR System provides dependable, consistent high-fidelity end-point PCR results for every DNA template, regardless of its source or sequence. The FailSafe PCR System will faithfully amplify your template every time. The FailSafe PCR PreMix Selection Kit includes the FailSafe PCR Enzyme Mix and a meticulously tested set of 12 FailSafe PCR PreMixes that cover a matrix of enzyme-specific PCR conditions that are optimal for amplifying different sequences (Fig. 1). The FailSafe PCR Enzyme Mix is a unique blend of thermostable enzymes that is capable of amplifying the most difficult DNA templates with extremely high sensitivity and high fidelity. Along with the FailSafe Enzyme Mix, at least one PreMix will contain the optimal PCR condition you need for successful and optimal PCR results with any template.

Catalog No.	Size
FS99060	60 U
<i>Contents: FailSafe™ PCR Enzyme Mix and all 12 FailSafe™ PCR 2X PreMixes.</i>	

Real-Time PCR

TAQXpedite™ GREEN Real-Time PCR MasterMix Kit

Fast PCR can be achieved using specialized thermocyclers, or by using enzyme/reagent combinations that improve PCR efficiency. Using any standard real-time thermocycler, the TAQXpedite™ GREEN Real-Time MasterMix Kit is able to achieve fast PCR results in as little as 30 minutes.

The TAQXpedite GREEN Real-Time PCR MasterMix Kit includes a unique blend of thermostable DNA polymerases with an optimized 2X MasterMix solution containing all

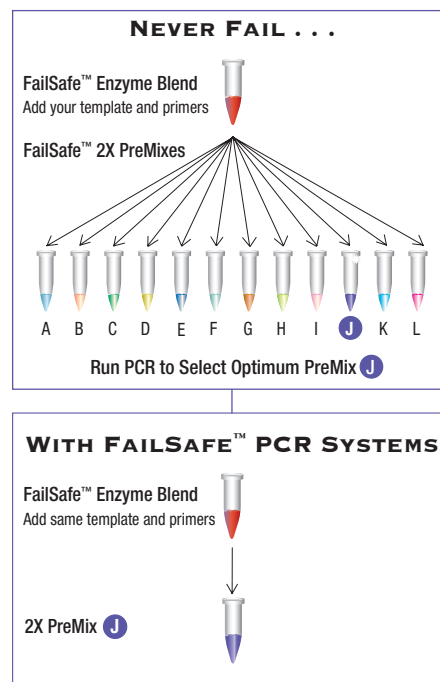


Fig. 1. Overview of the FailSafe PCR System. In the example, Premix J was determined experimentally to give optimal results with the template and primers being tested.

four dNTPs, MgCl₂ and SYBR® Green I dye. The solution also contains EPICENTRE's patented PCR Enhancer (with betaine*), which substantially improves the yield and specificity of amplification of many target sequences, especially those containing a high GC content or secondary structure. In addition, betaine also may enhance PCR by protecting DNA polymerases from thermal denaturation. The TAQXpedite™ GREEN Kit can also be used in high-throughput real-time PCR applications using SYBR Green I dye for the quantitation of PCR products.

Catalog No.	Size
TXG70796	96 x 25-µl reactions
TXG707400	400 x 25-µl reactions

FailSafe™ PROBES Real-Time PCR Optimization Kit

Designing probes for real-time PCR can be time-consuming and expensive. Given this effort, it is also important that PCR conditions are optimized to ensure the best results for a specific set of probes. The FailSafe™ PROBES Real-Time PCR System enables rapid, precise optimization of PCR experiments in which the product is detected using fluorescent, target-specific labeled probes.

*Use of betaine for DNA Polymerase Reactions, including, but not limited to, use for PCR or DNA Sequencing, is covered by U.S. Patent No. 6,270,962, European Patent No. 0742838, German Patent No. DE4411588C1, and other issued or pending applications in the U.S. and other countries that are either assigned or exclusively licensed to EPICENTRE. These products are accompanied by a limited non-exclusive license for the purchaser to use the purchased products solely for life science research. Contact EPICENTRE for information on licenses for uses in diagnostics or other fields.

The FailSafe PROBES Real-Time PCR System uses the FailSafe™ PCR Enzyme Blend, which has been proven to amplify the most difficult templates with extremely high specificity, sensitivity, and fidelity, and a set of eight specially chosen PCR 2X PreMixes representing a complete range of optimal real-time PCR conditions. Each PCR PreMix contains everything needed for optimal real-time PCR for a certain group of template and primer sequences, including EPICENTRE's FailSafe PCR Enhancer with betaine,* which improves amplification specificity, efficiency, and sensitivity. In addition, the specially designed PreMixes, in combination with the robust FailSafe PCR Enzyme Blend, enable setup of reactions at room temperature, so hot-start PCR is not necessary.

Catalog No.	Size
FSP51048	48 x 25- μ l reactions
<i>Contents: FailSafe PCR Enzyme Blend, eight FailSafe PROBES Real-Time PCR 2X PreMixes, Passive Reference Dye, and Stabilizer.</i>	

cDNA Synthesis

MonsterScript™ Reverse Transcriptase

MonsterScript™ 1st-Strand cDNA Synthesis Kit

MonsterScript™ Reverse Transcriptase is a thermostable reverse transcriptase that completely lacks RNase H activity, enabling it to synthesize longer cDNAs and prepare more complete libraries of first-strand cDNA molecules. EPICENTRE scientists have demonstrated reverse transcription of 15-kb RNA templates using MonsterScript Reverse Transcriptase (Fig. 2).

The MonsterScript 1st-Strand cDNA Synthesis Kit includes MonsterScript RT PreMix, which contains optimized concentrations of dNTPs, Mg²⁺, and betaine.* Betaine reduces pausing and stops by the reverse transcriptase, enabling improved reverse transcription through difficult sequences, such as regions of high GC content. The kit includes both an oligo(dT)-containing primer and a set of random nonamer primers.

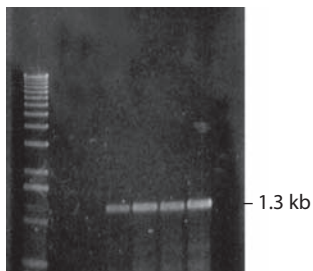


Fig. 2. MonsterScript™ Reverse Transcriptase produces full-length cDNA from mRNA >15 kb. The \approx 15.2-kb HGNEFp532 mRNA was reverse transcribed from total HeLa RNA in a standard MonsterScript reaction. Two microliters of the reaction was used to PCR amplify a 1.3-kb region within 68 bases of the 5' end of the HGNEFp532 mRNA. Agarose gel electrophoresis of the 1.3-kb amplicon from the 5' end of the mRNA demonstrates full-length cDNA synthesis.

Catalog No.	Size
MonsterScript™ Reverse Transcriptase	
MSTA5110	10 reactions
MSTA5124	24 reactions
<i>Includes MonsterScript™ 5X Reaction Buffer.</i>	
MonsterScript™ 1st-Strand cDNA Synthesis Kit	
MS040910	10 reactions
MS041050	50 reactions
<i>Contents: MonsterScript™ Reverse Transcriptase (with RNase Inhibitor), MonsterScript™ PreMix Solution (with Mg²⁺, dNTPs, and betaine*), Oligo(dT)-containing Primer, Random Nonamer Primers, and Sterile RNase-Free Water.</i>	

ExactStart™ Full-Length cDNA Library Cloning Kit

The ExactStart™ Full-Length cDNA Library Cloning Kit facilitates the precise identification of the 5' and 3' ends of coding and some noncoding RNAs. It complements functional genomic studies using DNA microarrays and serial analysis of gene expression (SAGE), which typically cannot identify these important transcript features. Unlike other full-length cDNA cloning methods, the ExactStart approach does not add template-independent nucleotides to the cDNA, simplifying the identification of the true transcription initiation site.

The ExactStart Kit procedure ensures that only full-length transcripts are cloned in the library. The novel cDNA synthesis method generates clones of coding and noncoding RNAs that other cDNA library construction kits may not capture. The ExactStart Kit contains most of the reagents needed for the creation of a directionally cloned cDNA library from as little as 1 μ g of total or up to 250 ng of poly(A) RNA. The researcher will need to supply a PCR system and two restriction enzymes to complete the cloned library.

Catalog No.	Size
ES0907	10 reactions

RNA Amplification

TargetAmp™ 1-Round Biotin-aRNA Amplification Kit 105

The new TargetAmp™ 1-Round Biotin-aRNA Amplification Kit 105 provides direct biotin labeling of aRNA (also called cRNA) target that produces superior GeneChip® array results at a new low price. The single-tube, 6-hour reaction enables you to perform target labeling and begin microarray hybridization on the same day. Each reaction produces microgram amounts of biotin-aRNA from as little as 25 ng of total RNA. The linear RNA amplification and labeling process preserves the relative transcript abundance of the sample.

Catalog No.	Size
TAB1R80510	10 reactions
TAB1R80524	24 reactions

TargetAmp™ 2-Round Biotin-aRNA Amplification Kit 3.0

The TargetAmp™ 2-Round Biotin-aRNA Amplification Kit 3.0 is the only kit that can produce microgram amounts of biotin-aRNA (also called cRNA) from as little as five cells (about 50 pg of total RNA) for microarray studies (Table 1). Biotin-aRNA produced by the kit can be hybridized to Affymetrix® GeneChip® arrays, Illumina® Expression BeadChips, and other commercial and spotted arrays that use biotin-labeled target aRNA. The linear RNA amplification process preserves the relative transcript abundance of the original sample.

Table 1. Yields and sensitivity of the TargetAmp™ 2-Round Biotin-aRNA Amplification Kit 3.0.

	Mouse Liver Total RNA		Mouse Skeletal Muscle Total RNA	
	50 pg	100 pg	50 pg	100 pg
Input total RNA	50 pg	100 pg	50 pg	100 pg
Biotin-aRNA Yield	19.3 µg	35.4 µg	12.1 µg	24.2 µg
Genes (transcripts) detected	7,481	8,840	7,593	8,352

Biotin-aRNA was prepared from the specified amount of mouse liver and skeletal muscle total RNAs using the TargetAmp™ 2-Round Biotin-aRNA Amplification Kit 3.0 and then hybridized to the Illumina® MouseRef-8 BeadChip array in duplicates. Data were imported into BeadStudio (Illumina) for analysis. Genes called “detected” are those with detection p-value >0.05.

Catalog No.	Size
TAB2R71010	10 reactions
TAB2R71024	24 reactions

TargetAmp™ Nano-g™ Biotin-aRNA Labeling Kit for the Illumina® System

The TargetAmp™ Nano-g™ Biotin-aRNA Labeling Kit for the Illumina® System produces biotin-aRNA (also called cRNA) with high signal intensity for use with Illumina gene expression systems, such as the Illumina Expression BeadChips.

TargetAmp Nano-g kit reactions have been optimized to minimize sample size, and maximize biotin-aRNA yield and signal intensity. A TargetAmp Nano-g kit reaction produces microgram amounts of biotin-labeled aRNA from as little as 25 ng of input total cellular RNA using a simplified, linear RNA amplification process. The procedure yields purified biotin-aRNA ready for hybridization in approximately 6 hours; similar kits from other suppliers may require over a day. The biotin-aRNA produced by a TargetAmp Nano-g kit reaction from 100 ng of input total RNA has been shown to detect more genes (RNA transcripts) than biotin-aRNA produced by another kit using 400 ng of input total RNA (Fig. 3).

Catalog No.	Size
TAN07924	24 reactions

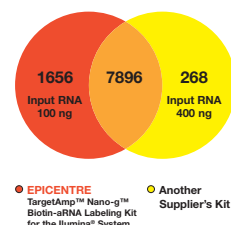


Fig. 3. Sensitivity of the TargetAmp™ Nano-g™ Biotin-aRNA Labeling Kit for the Illumina® System. Biotin-aRNA produced from 100 ng of total RNA using the TargetAmp Nano-g kit and hybridized to the Illumina MouseRef-8 Expression BeadChip detected 1,656 transcripts that were not detected using biotin-aRNA produced from 400 ng of total RNA using another kit.

DNA & RNA Purification

QuickExtract™ Plant DNA Extraction Solution

The QuickExtract™ Plant DNA Extraction Solution was developed for rapid and efficient extraction of PCR-ready genomic DNA from most plant leaf samples. The 8-minute, single-tube protocol requires two sequential heating steps and eliminates the need for bead beating, freezing, or grinding of plant leaf material. The absence of centrifugation steps or spin columns allows for the inexpensive processing of one to hundreds of samples simultaneously, and makes the QuickExtract Plant method fully compatible with robotic automation. The QuickExtract Plant DNA Extraction Solution has been used successfully to extract DNA from leaves of a wide range of plant species (Fig. 4) including corn, soybean, spelt, pepper, rosemary, grape, spinach, hopvine, and *Arabidopsis*.

Catalog No.	Size
QEP80705	50 x 100-µl extractions
QEP70750	500 x 100-µl extractions

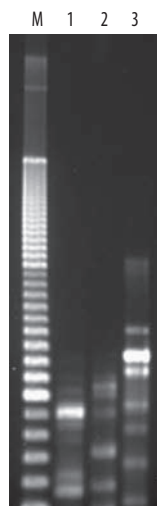


Fig. 4. PCR analysis of DNA extracted using QuickExtract™ Plant DNA Extraction Solution with different varieties of plant leaves. A 1-µl aliquot of DNA extracted using the QuickExtract protocol was used for 40 cycles of random amplification of polymorphic DNA (RAPD) with primer UBC-866 and the FailSafe™ PCR system. Lane M, 100-bp ladder; lane 1, pepper; lane 2, soybean; lane 3, spelt.

Direct Lysis Plasmid96 DNA Purification Kit**Direct Lysis Fosmid96 DNA Purification Kit**

The new Direct Lysis Plasmid96 and Fosmid96 kits offer direct lysis of an overnight culture, and eliminate the need for centrifugation of the culture and resuspension of the cell pellet, steps which are cumbersome in high-throughput format. The kits are designed to isolate DNA from 1 to 40 kb for rapid preparation of sequencing templates from either high-copy or single-copy plasmid and fosmid clones. The fast protocol, in a convenient standard 96-well plate format, eliminates the need for 2-ml deep-well growth plates. Typical DNA yields from a 200- μ l overnight culture of a high-copy fosmid vector will provide sufficient DNA for up to eight end-sequencing reactions.

Catalog No.	Size
Direct Lysis Plasmid96 DNA Purification Kit	
PLS84596	5x 96-well preps
<i>Contents: Five Culture Plates, five 96-well Fritted Filter Plates, five Collection Plates, Plate Sealers, Gas-Permeable Sealers, and Reagents for five 96-well preps.</i>	

Direct Lysis Fosmid96 DNA Purification Kit

FOS84596	5 x 96-well preps
<i>Contents: Five Culture Plates, five 96-well Fritted Filter Plates, five Collection Plates, Plate Sealers, Gas-Permeable Sealers, and Reagents for five 96-well preps.</i>	

MasterPure™ DNA Purification Kit for Blood Version II

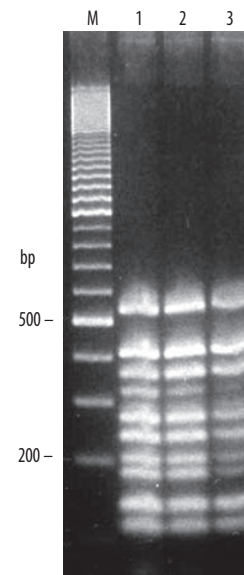
The MasterPure™ DNA Purification Kit for Blood Version II can be used to isolate exceptionally pure genomic DNA from whole blood or buffy coat. With the optimized protocol, up to 100 μ g of DNA can be recovered from 600 μ l of buffy coat in less than 30 minutes. The purified DNA contains both high- and low-molecular-weight genomic DNA that can be used directly as a template in amplification reactions (Fig. 5), for digestion with restriction enzymes, for Southern blotting, or other molecular biology applications. Protocols are provided for genomic DNA purification from whole blood and buffy coat. Both protocols are scalable for larger samples.

Catalog No.	Size
MB711740	40 ml of whole blood
MB711400	400 ml of whole blood
<i>Contents: Red Cell Lysis Solution, Tissue and Cell Lysis Solution, MPC Protein Precipitation Reagent, RNase A, TE Buffer.</i>	

Protein Purification and Cloning**Ready-Lyse™ Lysozyme Solution**

Ready-Lyse™ Lysozyme Solution is a nonmammalian, nonavian, recombinant lysozyme preparation for the lysis of Gram-negative (such as *E. coli*) and Gram-positive (such as *Bacillus* species) bacteria. The specific activity of Ready-Lyse Lysozyme is 200-fold higher than the specific activity of egg-white lysozyme and, therefore, less enzyme is needed in a reaction. Also, unlike egg-white lysozyme, Ready-Lyse Lysozyme Solution is stable at -20°C , eliminating the need to prepare a fresh solution for each use. The use of Ready-Lyse Lysozyme results in higher yields of protein than can be obtained with standard egg white lysozyme.

Fig. 5. Efficient multiplex PCR of purified blood DNA. A 100-ng sample of human genomic DNA purified with the MasterPure™ DNA Purification Kit for Blood Version II was amplified using the TAQXpedite™ PCR System with nine primer sets representing different exons of the dystrophin gene. All nine amplicons were produced in three amplification reactions (lanes 1-3). Lane M, 100-bp DNA ladder.



Ready-Lyse Lysozyme Solution can also be used in nucleic acid preparations from Gram-negative and Gram-positive bacteria. The use of Ready-Lyse Lysozyme results in higher yields of DNA and RNA than those obtained with standard egg-white lysozyme. Due to its higher specific activity, less Ready-Lyse Lysozyme is needed for lysis compared to egg-white lysozyme, reducing the loss of nucleic acid from enzyme binding.

Catalog No.	Size
R1802M	2 x 10 ⁶ U
R1804M	4 x 10 ⁶ U
R1810M	10 x 10 ⁶ U

DNA & RNA Endonucleases**OmniCleave™ Endonuclease**

OmniCleave™ Endonuclease is a highly purified enzyme from a recombinant *E. coli* strain that degrades single- and double-stranded DNA and RNA to di-, tri-, and tetranucleotides. OmniCleave Endonuclease has the same substrate specificity and yields the same products as Benzonase®, an enzyme derived from *Serratia marcescens*.

OmniCleave Endonuclease improves handling and yield of protein preparations by reducing the viscosity of cell lysates due to nucleic acids. It is useful for removing trace amounts of nucleic acids in protein preparations, removing host DNA from phage preparations, and improving electrophoretic and chromatographic separation of proteins isolated from whole-cell lysates.

Catalog No.	Concentration	Size
OC7810K	200 U/ μ l	10,000 U
OC7850K	200 U/ μ l	50,000 U