

## I. Nucleic Acid Sample Preparation

## A. Column Preparation

### Advantages:

- Rapid isolation of high quality DNA and RNA
- Extracted DNA is ready for PCR amplification
- Extracted RNA is ready for RT-PCR
- Consistent, high yields

Maxim's nucleic acid isolation kits use column purification methods and provide all the necessary reagents and protocols to extract high quality DNA and RNA from a diversity of sample material. Use of these kits precludes the need for phenol, chloroform or other organic extraction. The DNA/ RNA isolated is free of proteins and degrading enzymes and may be used directly for RFLP, restriction digests, cloning, Southern blotting, PCR amplification, among other DNA analysis techniques.

### 1. Blood DNA Sample Isolation Column Kit

**Product Blood DNA Sample Isolation Column Kit** 

Kit Components Spin Columns

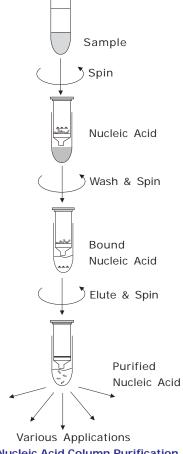
> **BD-1 Solution** Protease Lysis Solution Wash Buffer **Elution Solution**

Storage Store at 22-25 °C

Sample Source Fresh or frozen whole blood Sample size 500 μL

**Elution Volume** 2x100 μL

The Blood DNA Sample Preparation Column Kit offers a quick and easy way to isolate DNA from whole blood samples using isolation methods based on binding nucleic acid to column membrane. The purified DNA can be used directly for PCR amplification. The following example is demonstrated by PCR amplification with allelic specific primers and column isolated blood DNA samples.



**Nucleic Acid Column Purification** 

Impurities Nucleic Acid

Genomic DNA is isolated with Maxim's blood DAN sample isolation column kit (Cat. No. SA-40007) and is further quality validation of human thrombosis MPCR Kit

Lane M: DNA M.W. Marker

Lane 1: PCR using wild type MPCR primers with patient #1 DNA

Lane 2: PCR using mutant type MPCR primers with patient #1 DNA

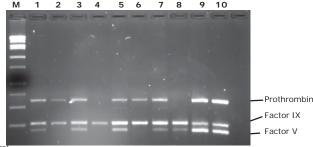
Lane 3: PCR using wild type MPCR primers with patient #2 DNA

Lane 4: PCR using mutant type MPCR primers with patient #2 DNA Lane 5: PCR using wild type MPCR primers with patient #3 DNA

Lane 6: PCR using mutant type MPCR primers with patient #3 DNA Lane 7: PCR using wild type MPCR primers with patient #4 DNA

Lane 8: PCR using mutant type MPCR primers with patient #4 DNA

Lane 9: PCR using wild type MPCR primers with wild type positive control Lane 10: PCR using mutant type MPCR primers with mutant type positive control



Cat. No.	Product Description	Rxns.
SA-40008	Blood DNA Sample Isolation Column Kit	50
SA-40007	Blood DNA Sample Isolation Column Kit	100



#### 2. Viral DNA/RNA Isolation Column Kit

Product Viral DNA/RNA Isolation Column Kit

Kit Components Spin Columns

Carrier Solution Lysis Solution Wash Buffer Elution Solution

Storage Store at 22 – 25 °C

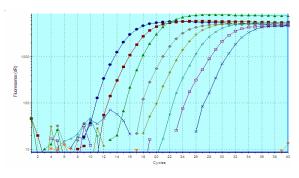
Sample Source Plasma, serum, urine, cell-culture, supernatant, or cell-free body fluid

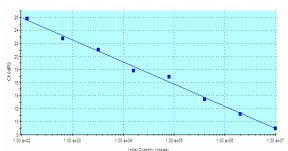
Sample Size 140  $\mu$ L or 1 x 10<sup>5</sup> cells

Elution Volume 2X 40 μL

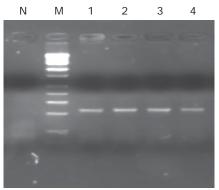
The Viral DNA/RNA Isolation Column Kit provides a fast, easy method to isolate high quality DNA and RNA from a variety of fluids using isolation methods based on binding nucleic acid to column membrane. Extracted DNA can be used directly for PCR amplification, RNA for RT-PCR amplification.

#### Panel A:





### Panel B:



Different HCV patient's Sera RNA were isolated using the Virual DNA/RNA Isolation Column Kit.

Lane N: Negative Control

Lane M: DNA M.W. marker

Lane 1: HCV RT-PCR amplicon from patient #1

Lane 2: HCV RT-PCR amplicon from patient #2

Lane 3: HCV RT-PCR amplicon from patient #3 Lane 4: HCV RT-PCR amplicon from patient #4

### Single-Step RT-QPCR for HCV.

HCV RNA was isolated from HCV-positive patients' serum using **SA-40009**. **Panels A** (left) was the amplification profiles of serial 5-fold dilutions of a cDNA synthe-

sis reaction amplified with Maxim's RT-40003 and TM-60047/TP-10047 TaqMan assay.

Panels B (right) was the regular Single-Step RT-PCR amplification with different HCV-positive patients' serum. RT-PCR results were analyzed by EtBr agarose gel.

Cat. No.	Product Description	Rxns.
SA-40010	Viral DNA/RNA Isolation Column Kit	50
SA-40009	Viral DNA/RNA Isolation Column Kit	100



#### 3. Plasmid DNA Isolation Column Kit

**Product** Plasmid DNA Isolation Column Kit

Kit Components Spin Columns

Resuspension Solution

Lysis Solution

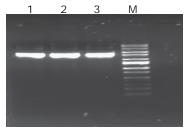
Neutralization Solution

Wash Solution Elution Solution

Storage Store at 22-25 °C Sample Source Bacterial cell culture

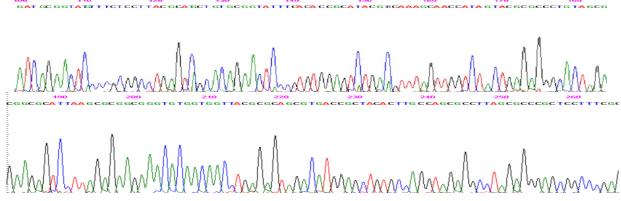
Sample Volume  $1.5 - 5 \, mL$ **Elution Volume** 60-100 μL

The Plasmid DNA Isolation Column Kit offers a quick, efficient, and convenient means to extract high quality DNA from bacterial cell culture through purification methods based on binding nucleic acid to column membrane. Extracted DNA can be used directly for a variety of genetic applications without further manipulation.



Three genotypes of pASA plasmid DNA were isolated using Maxim Plasmid DNA Isolation Kit.

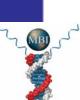
Lane 1: Wild-Type factor V gene (Genotype G/G) Lane 2: Hetero-Type factor V gene (Genotype G/A) Lane 3: Homo-Type factor V gene (Genotype A/A)
Lane M: DNA M.W. marker



A typical example of plasmid sequencing result.

Plasmids are purified by Maxim's plasmid DNA isolation column kit.

Cat. No.	Product Description	Rxns.
SA-40012	Plasmid DNA Isolation Column Kit	50
SA-40011	Plasmid DNA Isolation Column Kit	100



### 4. PCR Cleanup Column Kit

Product PCR Cleanup Column Kit

Kit Components Spin Columns

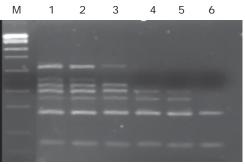
Binding Buffer Wash Buffer Elution buffer

Storage Store at 22-25 °C

Sample Source PCR product

 $\begin{array}{lll} \text{Sample Size} & 50 \; \mu\text{L} \\ \text{Elution Volume} & 30\text{-}50 \; \mu\text{L} \\ \end{array}$ 

The PCR Cleanup Column Kit offers a quick, efficient, and convenient means to extract high quality DNA from PCR amplified products through purification methods based on binding nucleic acid to column membrane. Extracted DNA can be used directly for a variety of genetic applications without further manipulation.



#### MPCR amplicons are purified by Maxim PCR Cleanup kits

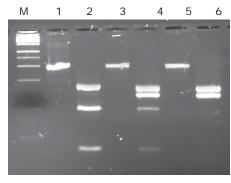
Lane M: DNA M.W. Marker

Lane 1: Original MPCR amplicons with different sizes

Lane 2: Maxim's PCR Cleanup Column Kit

Lane 3: Supplier A
Lane 4: Supplier B
Lane 5: Supplier C

Lane 6: Supplier D



PCR products were purified by using Maxim PCR Cleanup Column Kit. The Purified PCR Products were further digested with Mnl I for different genotypes (see below figure for details).

Lane M: DNA M.W. Marker

Lane 1: PCR amplicon from Wild Type

Lane 2: PCR amplicon from Wild Type was digested with Mnl I

Lane 3: PCR amplicon from Hetero Type

Lane 4: PCR amplicon from Hetero Type was digested with Mnl I

Lane 5: PCR amplicon from Homo Type

Lane 6: PCR amplicon from Homo Type was digested with Mnl I



Wild Type (G/G): 157, 93, 37 bp Hetro Type (G/A): 157, 130, 93, 37 bp Homo Type (A/A): 157, 130 bp

Cat. No.	Product Description	Rxns.
SA-40014	PCR Cleanup Column Kit	50
SA-40013	PCR Cleanup Column Kit	100



## **B. Chemical Preparation**

### 1. BDtract Genomic DNA Isolation Kit

#### Features:

Economical, Fast, and Simple

 $\sqrt{\text{High DNA Yield}}$ : 30-40 µg/mL blood

 $\sqrt{\text{Ultra Purity}}$ :  $A_{260}/A_{280}$  ratio of 1.8 – 1.9

V Low contamination: No RNA, Protein, or degrading enzyme contamination

 $\sqrt{\text{Non-toxic:}}$  No phenol, chloroform, or other toxic extractions

 $\sqrt{\text{Stable}}$ : Reagents stored at room temperature

Product BDtract Genomic DNA Isolation Kit

Preparation Time Approximately one hour

Kit Components Cell lysis buffer

RBC wash buffer Nuclei lysis buffer RNase solution

Protein precipitate solution

Optimized protocol

Storage 22-25°C

Sample Source Whole blood

Cultured cells

Tissue

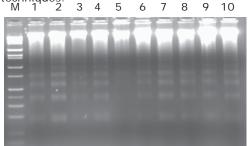
Bacteria

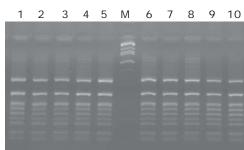
Sample Size Cells grown in suspension: 5-10 X 10<sup>6</sup> cells

Cells grown in monolayer: 100mm culture dish

Tissue: 50-100 mg Bacteria: 1-5 mL Blood: 2.5 ml

Maxim's Genomic DNA Isolation Kit provides all the necessary reagents and protocols for quickly extracting high-molecular-weight DNA from whole blood, cultured cells, tissue, and bacteria. This kit precludes the need for phenol, chloroform or other organic extraction. RNA is removed by treatment with DNase-free RNases. Proteins are further removed by salt precipitation. Genomic DNA isolation is achieved through alcohol precipitation and then dissolved in TE buffer. The purified DNA is free of RNA, proteins, and degrading enzymes, and may be used directly for RFLP, restriction digests, cloning, Southern blotting, PCR amplification, and other DNA analysis techniques.





Blood Samples were stored at 4°C for 2 months.

Genomic DNA was purified using Maxim BDtract Genomic DNA Isolation Kit (Left Figure).

100 ng of each purified DNA was further validated with Maxim's DMD-M150 MPCR Kit (Right Figure).

Lane M: DNA M.W. Marker

Lane 1-10: individual patient #1-10.

### **Order Information**

Cat. No.Product DescriptionRxns.SA-40002BDtract Genomic DNA Isolation Kit50SA-40001BDtract Genomic DNA Isolation Kit100

#### 2. RDtract DNA/RNA Isolation Kit

#### Features:

√ Economical, fast, and simple

√ High RNA & DNA yields

No protein, or degrading enzyme contamination

 $\sqrt{}$  No phenol or  $\beta$ -mercaptoethanol extraction

√ Reagents stable at room temperature

Product RDtract DNA/RNA Isolation Kit

Preparation Time 1 hour RNA; 3 hours DNA

Kit Components Lysis Buffer

RNA Precipitate Reagent

Reverse Extraction Reagent for DNA

DNA Precipitate Reagent

Optimized Protocol

Storage 22-25 °C

Reagents Needed Chloroform (ACS grade)

Isopropanol (ACS grade) 75% Ethanol (ACS grade)

Sample Source Cultured cells grown in suspension

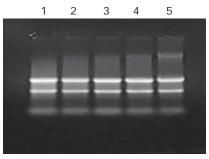
Cultured cells grown in monolayer

Blood Bacteria

Sample Size Cells grown in suspension: 1-2x10<sup>6</sup> cells

Cultured cells grown in monolayer: 1-6 wells of a 6 well culture dish Blood: 1.0 mL whole blood Bacteria: 0.5mL bacterial culture

The RNA/DNA Isolation Kit is a simple and easy method to simultaneously isolate RNA and DNA from tissue cultured cells, blood, and bacteria. The extracted RNA is free of DNA, protein, and degrading enzyme contamination and can be used for Northern blot analysis, in vitro translation, microinjection, RNase protection assays, RT-PCR, and poly (A)+ selection. Extracted DNA is free from RNA and protein contamination, and greater than 40kb in length. DNA can be used for Southern hybridization and PCR amplification.

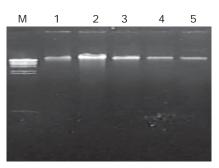


Total RNA isolated from culture cells using RDtract RNA/DNA Isolation Kit.

Lane 1: 5 µg total RNA from Hela cells Lane 2: 5 µg total RNA from P388D-1cells Lane 3: 5 µg total RNA from Jurket cells Lane 4: 5 µg total RNA from Caski cells Lane 5: 5 µg total RNA from SiHa cells

## **Order Information**

Cat. No.	Product Description		
SA-40004	RDtract RNA/DNA Isolation Kit		
SA-40003	RDtract RNA/DNA Isolation Kit		



DNA isolated from culture cells using RDtract RNA/DNA Isolation Kit.

Lane M: DNA M.W. marker

Lane 1: DNA isolated from Hela cells Lane 2: DNA isolated from P388D-1 cells Lane 3: DNA isolated rom Jurket cells

Lane 4: DNA isolated from Caski cells

Lane 5: DNA isolated from SiHa cells

Rxns.

50 100



### 3. GStract Total RNA Isolation Kit

#### Features:

 $\sqrt{}$  Economical, fast, and simple

√ High RNA yield

 $\sqrt{}$  Extract RNA from any cell or tissue source

 $\sqrt{\text{Ultra purity: A}_{260}}$  /  $A_{280}$  ratio of 1.8 - 1.9

√ No DNA or protein contamination

Product GStract Total RNA Isolation Kit

Preparation Time Approximately 30 minutes

Kit Components Cell lysis buffer

Total RNA purification buffer

Optimized protocol

Storage 4 ° C

Reagents Needed H<sub>2</sub>O-Saturated phenol

Chloroform (ACS grade) Isopropanol (ACS grade) 75% Ethanol (ACS grade)

Sample Source Tissue

Cells grown in suspension Cells grown in monolayer

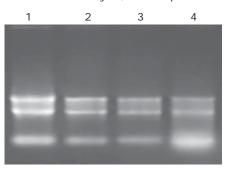
Bacteria

Sample Size Tissue: 50-100mg

Cells grown in suspension: 5-10x106 cells
Cells grown in monolayer: 100mm culture dish

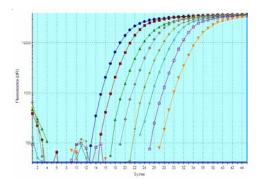
Bacteria: 1-5mL bacterial culture

Maxim's total RNA Isolation Kit allows the isolation of intact high quality, full-length RNA from virtually any tissue or cell. The method is based on a guanidinium isothiocyanate extraction. The kit procedure includes a further extraction step to eliminate DNA, polysaccharides, and other contaminants. Extracted RNA can be used directly for Northern blot analysis, RNase protection assays, RT-PCR, Poly (A)+ selection, and in vitro translation.



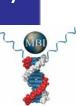
Total RNA isolated from Mouse tissues using GStract RNA Isolation Kit.

Lane 1: Mouse brain total RNA Lane 2: Mouse heart total RNA Lane 3: Mouse lung total RNA Lane 4: Mouse spleen total RNA

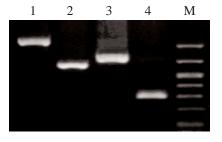


One-step RT-PCR of Interleukin-6 fragment from 100 ng-1 pg (5-fold series dilution) of total HeLa RNA (using GStract RNA Isolation Kit.). Reactions were carried out on the Stratagene Mx3000P Detection System.

Cat. No.	Product Description	<u>Rxns.</u>
SA-40006	GStract Total RNA Isolation Kit	50
SA-40005	GStract Total RNA Isolation Kit	100



## II. PCR-Ready cDNA



RT-PCR performed using PCR-ready cDNA and following primer pairs
Lane 1: BAC-1001/1007
Lane 2: BAC-1001/1004

Lane 1: BAC-1001/1007 Lane 2: BAC-1001/1004 Lane 3: BAC-1008/1007 Lane 4: BAC-1008/1004 Lane M: DNA M.W. marker The PCR-Ready cDNA is synthesized with an oligo(dT) anchor primer and subsequently converted into ds cDNA. All cDNAs have been tested using one of house-keeping genes and one of the low copy genes.

Sufficient cDNAs & reagents are provided for 30X 50  $\mu$ l PCR reactions. PCR protocol is provided in the manual.

#### Reference

Belyavski, A., et al. (1989) NAR. 17:2919.

### **Kit Components**

- PCR-Ready cDNA
- · Control PCR primers
- Manual

	mRNA Source	Cat. No.
Human	Human Adipose	PC-40001
	Human Brain (whole)	PC-40002
	Human Breast	PC-40003
	Human Heart	PC-40004
	Human Small Intestine	PC-40005
	Human Kidney	PC-40006
	Human Liver	PC-40007
	Human Lung	PC-40008
	Human Lymph Node	PC-40009
	Human Monocyte	PC-40010
	Human Ovary	PC-40011
	Human Pancreas	PC-40012
	Human Placenta	PC-40013
	Human Prostate	PC-40014
	Human Skeletal Muscle	PC-40015
	Human Spleen	PC-40016
	Human Stomach	PC-40017
	Human T-cells (JURKAT)	PC-40018
	Human Testis	PC-40019
	Human Uterus	PC-40020
	Human Leukemia Chronic Myelogenous K562	PC-40021
	Human Leukemia Promyelocytic, HL-60	PC-40022
Mouse	Mouse Brain	PC-40023
	Mouse Heart	PC-40024
	Mouse Kidney	PC-40025
	Mouse Liver	PC-40026
	Mouse Lung	PC-40027
	Mouse Spleen	PC-40028
	Mouse Small Intestine	PC-40029
	Mouse Thymus	PC-40030



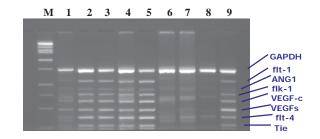
	mRNA Source	Cat. No.
Rat	Rat Bladder	PC-40031
	Rat Heart	PC-40032
	Rat Lung	PC-40033
	Rat Liver	PC-40034
	Rat Kidney	PC-40035
	Rat Brain	PC-40036
	Rat Spllen	PC-40037
	Rat Intestine	PC-40038

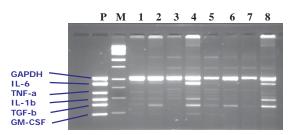
## **Multiple Genes Expression Screening**

### Gene Expression of Different Sources of Human cDNA with Maxim MPCR kit MP-70173

Lane 1: Human Bladder cDNA Lane 2: Human Heart cDNA Lane 3: Human Lung cDNA Lane 4: Human Liver cDNA Lane 5: Human Placenta cDNA Lane 6: Human Ovary cDNA Lane 7: Human Small Intestine cDNA Lane 8: Human Testis cDNA Lane 9: Human Breast cDNA

Lane M: DNA M.W. Marker

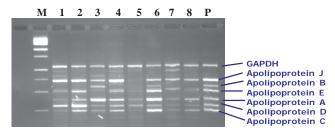




#### Gene Expression of Different Sources of Mouse cDNA

### with Maxim MPCR kit MP-70103

Lane 1: Mouse Brain cDNA Lane 2: Mouse Heart cDNA Lane 3: Mouse Lung cDNA Lane 4: Mouse Placenta cDNA Lane 5: Mouse Lung cDNA Lane 6: Mouse Thymus cDNA Lane 7: Mouse Small Intestine cDNA Lane 8: Mouse Spleen cDNA Lane P: Positive Control form the kit Lnae M: DNA M.W. Marker



#### Gene Expression of Different Sources Rat cDNA

### with Maxim MPCR Kit MP-70002

Lane 1: Rat Bladder cDNA Lane 2: Rat Brain cDNA Lane 3: Rat Heart cDNA Lane 4: Rat Small Intestine cDNA Lane 5: Rat Kidney cDNA Lane 6: Rat Kiver cDNA

Lane 7: Rat Lung cDNA Lane 8: Rat Spleen cDNA

Lane P: Positive Control from the kit Lane M: DNA M.W. Marker



## III. In Stock DNA and Total RNA

### In stock DNA/ total RNA from cultured cells:

In stock DNA and total RNA are available from the following cell lines. The genomic DNA and total RNA are prepared by Maxim's superior extraction kits. The genomic DNA has an average >40 Kb in molecular weight. The total RNA has distinguished 18S and 28S bands indicating a high quality of RNA. Custom services for other cell lines are also available. Each package contains 100  $\mu$ g of genomic DNA or 100  $\mu$ g total RNA.

### **Order Information**

#### Virus infected cells

Cat. No. (DNA)	Cat. No. (RNA)	Cell line	<u>Characters</u>
ID-40001	IR-40001	B-958	Human, EBV infected
ID-40002	IR-40002	Raji	Human, EBV infected
ID-40003	IR-40003	C-33A	Human, HPV free
ID-40004	IR-40004	Caski	Human, HPV 16 infected, ~600 copies
ID-40005	IR-40005	Hela	Human, HPV 18 infected, ~25 copies
ID-40006	IR-40006	Hela S3	Human, HPV 18 infected, ~25 copies
ID-40007	IR-40007	Siha	Human, HPV 16 infected, ~1-2 copies
ID-40008	IR-40008	HUT 102	Human, HTLV I infected

#### Leukemia

Cat. No. (DNA)	Cat. No. (RNA)	Cell line	<u>Characters</u>
ID-40009	IR-40009	CCRF-CEM	Human, acute lymphoblastic leukemia
ID-40010	IR-40010	HL-60	Human, promyelocytic leukemia
ID-40011	IR-40011	Jurkat, clone E6	Human, T-cell leukemia
ID-40012	IR-40012	K562	Human, chronic myelogenous leukemia
ID-40013	IR-40013	KG-1	Human, bone marrow, acute myelogenous
			leukemia

#### Others:

Cat. No. (DNA)	Cat. No. (RNA)	Cell line	<u>Characters</u>
ID-40014	IR-40014	BeWo	Human, choriocarcinoma
ID-40015	IR-40015	BT-474	Human, Breast ductal cancer
ID-40016	IR-40016	MCF 7	Human, Breast adenocarcinoma
ID-40017	IR-40017	HT 1080	Human, Fibrosarcoma
ID-40019	IR-40019	P388D1	Mouse, Lymphoid Neoplasma



## IV. Single Step RT-PCR

Maxim's Single Step RT-PCR kit provides a simple method to perform both RT and PCR concurrently in a single tube. Traditional methods have required that these two reactions proceed separately, allowing for potential sample cross contamination. As no reagents are added in Maxim's single step reaction, this kit effectively eliminates the problem of cross-contamination. Another advantage this kit offers is its exquisite sensitivity and efficiency, both key elements in PCR.

As illustrated in the following figue, traditional methods require separate steps for reverse transcription and PCR, thus requiring more hands-on time and allowing potential sample cross-contamination. In contrast, no additional reagents are added between steps in the single step method, thus eliminating possible contamination.

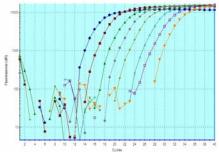
### Advantages:

- √ Superior yields
- √ High Sensitivity
- √ No cross contamination
- √ Multiple gene amplifications
- $\sqrt{\phantom{a}}$  Fast and convenient

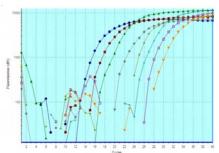
Quantity	<u>Storage</u>
1000 μL	-20°C
25 μL	-20°C
50 μL	-20°C
250 μL	-20°C
200 μL	-20°C
1.2 mL	-20°C
	1000 μL 25 μL 50 μL 250 μL 200 μL

### Two step RT-PCR

Primers + RNA + all reagents for RT



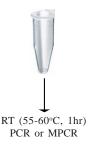
One-Step reverse transcription realtime QPCR of human SARS RNA.

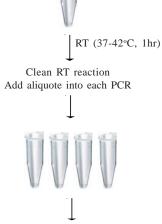


Two-Steps reverse transcription realtime QPCR of human SARS RNA.

## Single step RT-PCR

Primers + RNA + all reagents for RT-PCR





Perform RT-PCR or RT-MPCR

Principle of Single step RT-PCR vs. Two step RT-PCR

### **Order Information**

Cat. No. RT-40003 Product Description
Single Step RT-PCR Kit

Rxns.

50

11

## V. First Strand cDNA Synthesis Kit

RT PCR results are crucially dependent on high quality RNA and cDNA. If these messages are not copied, subsequent PCR will be difficult or impossible. Due to the robust nature of PCR, sometimes false amplification bands may appear. The RT kit from Maxim represents a revolution in the ability to copy RNA. Specially selected reverse transcriptase with little RNase H activity provides the ability to synthesize high yield and full length cDNA. The optimized RT protocol is easy to follow and is suited for GC-rich RNA targets. The control cRNA and its primers provide a positive control for each individual RT performance and reagent stability. When used in combination with Maxim's other PCR products, outstanding RT-PCR results are guaranteed.

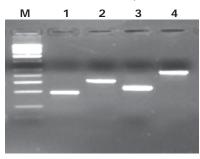


Fig.1 The viral RNA was isolated and RT-PCRs were performed using cDNA generated by Maxim's first strand cDNA synthesis kit.

Lane M: DNA M.W. Marker Lane 1: Influenza virus type A Lane 2: Influenza virus type B Lane 3: Respiratory Syncytial Virus Lane 4: Adenovirus type 3

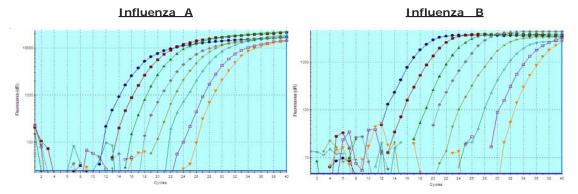


Fig 2.Real-Time Quantitative PCR of Human Influenza A & B cDNA. Viral Total RNA were isolated from patient's throatwash using Maxim's isolation kit (Cat. No. SA-40009). A 5-fold serise dilution of viral cDNA (as shown on Fig 1.) was tested. Starting viral cDNA quantitaties range from 1 ng-6 fg per 25 μl reaction.

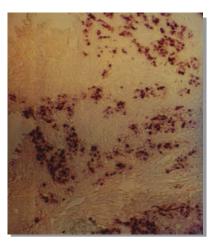
Each Kit contains the following reagents, sufficient for 50 RT reactions of 50  $\mu l$  each.

Kit component	10 Rxns	50 Rxns
MMLV-RT (250 $u/\mu l$ )	50 μΙ	50 μΙ
RNase inhibitor (50 u/µl)	30 μΙ	30 μΙ
dNTPs (1 mM each)	200 μΙ	1.0 ml
RT buffer (5X)	100 μΙ	0.5 ml
Oligo(dT) <sub>20 mers</sub> (50 $\mu$ M)	40 μΙ	200 μΙ
Random hexamers (50 µM)	40 μΙ	200 μΙ
Control RNA (0.1 µg/µl)	5 μΙ	10 μΙ
Control primers (5 µM)	10 μΙ	50 μΙ
Optimized RT protocol	1 copy	1 copy

Cat. No.	Product Description	Rxns.
RT-40001	RTeasy Reverse Transcriptase Kit	10
RT-40002	RTeasy Reverse Transcriptase Kit	50



## VI. In Situ Hybridization and Detection Kits

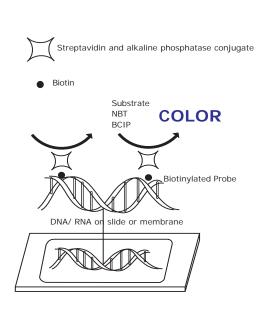


Representative example of results obtained from Human Nasopharygeal Carcinoma stained with EBV probe using Maxim's Sensitive In Situ Hybridization/Detection Kit (BCIP/NBT). Dark stained cells indicate the positive results.

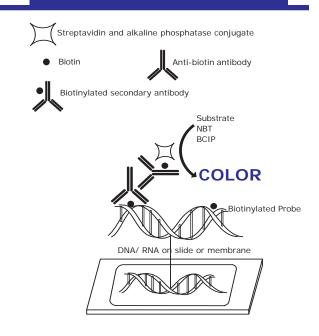
MBI's in situ kits are a modification and improvement on previous methods. Our kits offer the most sensitive non-isotopic method for detection of specific nucleic acid sequences within cell and tissue sections. Our unique hybridization and wash buffers provide you with rapid hybridization and the greatest optimal stringency to produce the most intense staining with minimal background.

We offer two levels of sensitivity: Sensitive (IH-60001) and Ultra-sensitive (IH-60002). Both kits achieve maximum sensitivity through the use of the biotin-streptavidin amplification system. The ultra-sensitive kit also includes an anti-biotin antibody and a biotinylated secondary antibody to achieve an even higher level of sensitivity. All kits include ready-to-use reagents, including BCIP/NBT, that provide a simple, rapid, and sensitive means to detect target DNAs in cell and tissue sections.

### Sensitive in situ Kit



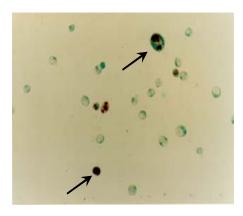
### Ultra-Sensitive in situ Kit



Cat. No.	Product Description	Rxns.
IH-60001	Sensitive In situ Hybridization/Detection Kit	100
IH-60002	Ultra-sensitive In situ Hybridization/Detection Kit	100



## VI. In Situ Hybridization and Detection Kits



Maxim's In Situ Application kits offer a complete set of reagents that have been designed to detect specific nucleic acid sequences within cell and tissue sections. All kits use our unique in situ hybridization/detection system and are supplemented with specific biotin-probes. We also offer a Tutor kit for first-time users and new labs. The in situ tutor kit provides a complete easy-to-use system that includes the human Alu probe and quality positive controls. This will ease you into the in situ hybridization procedure.

Human lymphocytes stained with EBV biotin-probe using BCIP/NBT chromogen. Arrows indicate the positive results.

### **Order Information**

Cat. No.	Product Description	Rxns.
IH-60003	In situ hybridization/detection tutor kit	100
IH-60004	EBV in situ hybridization/detection	100
IH-60005	HPV in situ hybridization/detection kit, (types 6/11/16/18/31/33)	100
IH-60006	HPV in situ hybridization/detection kit, (types 6/11)	100
IH-60007	IHD-PV16 HPV in situ hybridization/detection kit, (types 16/18)	100
IH-60008	HPV in situ hybridization/detection kit, (types 31/33)	100

**Tutor Kit** contains the following reagents, sufficient for 100 in situ hybridization/detection.

Kit component	Size
Human HKG Biotinylated Probe	0.5 ml
Tutor Positive Control Slide	10 slides
Proteinase K/Dilution Buffer	4 mg/2ml
Hybridization Solution	6 ml
Blocking Solution, 20X	50 ml
Mouse anti-biotin Ab solution	6 ml
Biotinylated anti-mouse Ab solution	6 ml
Label (AP-Streptavidin Conjugate)	6 ml
Substrate (BCIP/NBT)	6 ml
Detergent Wash Solution (20X)	100 ml
RNase (15 μg/ml)	6 ml

**Application Kit** contains the following reagents, sufficient for 100 *in situ* hybridization/detection.

Kit component	Size
Specific Biotinylated Probe	0.5ml
Proteinase K/Dilution Buffer	4 mg/2ml
Hybridization Solution	6 ml
Blocking Solution, 20X	50 ml
Mouse anti-biotin Ab solution	6 ml
Biotinylated anti-mouse Ab solution	6 ml
Label (AP-Streptavidin Conjugate)	6 ml
Substrate (BCIP/NBT)	6 ml
Detergent Wash Solution (20X)	100 ml
RNase (15 μg/ml)	6 ml

We also offer many high quality biotin labeled DNA/cDNA fragment probes that are suitable for in situ hybridization assay on the following page. All probes can be used in combination with our unique *in situ* hybridization/detection kit (Cat. No. IH-60001 and IH-60002) listed on the previous page. Each probe is provided in an amount (8 µg) sufficient for 50 *in-situ* hybridization/detection reactions.



## VII. In Situ Hybridization Biotin-Probes

Maxim is pleased to offer high quality biotin-probes. These biotin-probes have been generated using Maxim's proprietary technology to ensure multiple biotin molecules per probe. The probe's length is > 90bp, which is perfectly suited for applications such as in-situ hybridization, Southern blot, RNase protection assays, etc. All probes can be used in combination with our unique in situ hybridization/detection system. Each probe is provided in an amount (8  $\mu$ g) sufficient for 50 in-situ hybridization/detection reactions. For other applications, please consult Maxim's custom service first.

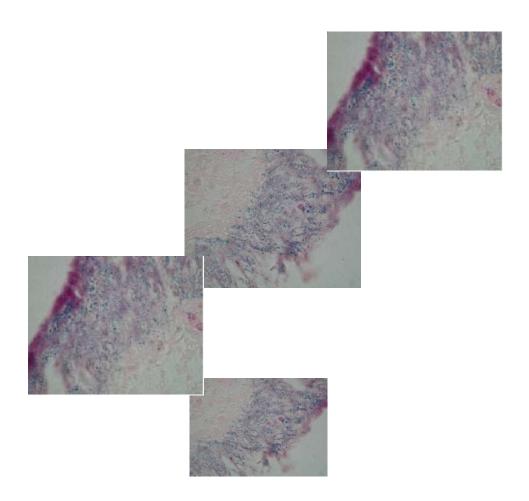
Cat. No.  Cytokines & Growth Factors	Probe Size (bp)	Encoding Gene
IH-60015	810	Human IL1-a
IH-60016	556	Human IL1-b
IH-60017	425	Human IL2
IH-60018	225	Human IL4
IH-60019	360	Human IL6
IH-60020	300	Human IL8
IH-60012	223	Human IL10
IH-60013	323	Human IL12 (P35)
IH-60014	381	Human IL12 (P40)
IH-60040	140	Human Bax Gene
IH-60041	235	Human bcl-2 Gene
IH-60042	371	Human bcl-xL
IH-60044	318	Human CPP-32
IH-60047	427	Human Fas Gene
IH-60048	250	Human FasL Gene
IH-60049	122	Human Fos Gene
IH-60050	440	Human GM-CSF
IH-60064	656	Human ICE Gene
IH-60065	294	Human IFN-γ
IH-60011	158	Human IkB Factor
IH-60022	250	Human c-jun
IH-60030	371	Human c-myc
IH-60031	409	Human NFkB Factor
IH-60032	200	Human P53 Gene
IH-60035	261	Human TGF-β
IH-60036	680	Human TNF–α
IH-60038	294	Human VEGF, all types
IH-60024	395	Human MMP1
IH-60025	191	Human MMP2
IH-60026	351	Human MMP3
IH-60027	282	Human MMP7
IH-60028	216	Human MMP9
Bacteria		
IH-60045	182	C. trachomatis
IH-60046	364	C. trachomatis cryptic
IH-60051	300	N. gonorrhoea
IH-60061	349	H. pylori/ Cag A
IH-60062	298	H. pylori/ Specific Ag
IH-60023	384	M. avium/ 16S
IH-60029	470	M. tuberculosis IS6110
IH-60037	218	U. urealyticum urease



## Order Information

Cat. No.	Probe Size (bp)	Encoding Gene
Virus		
IH-60043	400	CMV Matrix Protein
IH-60052	433	HBV core antigen
IH-60053	150	HCV unknown region
IH-60054	154	HDV ORF9
IH-60055	480	HHV6 Major Capsid
IH-60056	263	HPV Type 6
IH-60057	144	HPV Type 11
IH-60058	601	HPV Type 16
IH-60059	360	HPV Type 18
IH-60060	350	HPV Type 31
IH-60063	241	HSV I/II DNA Pol.
IH-60039	224	Varicella-Zoster Virus

Maxim has many different gene fragments available for biotinylation to be used for in situ hybridization, please inquire for any that are not listed in the current list.



## VIII. Tissue Block

### **Featured Applications:**

- √ In Situ Hybridization
- √ PCR
- √ In Situ PCR
- √ Antibody Quality Control
- √ Antigen Specificity Distribution
- √ Total RNA Isolation
- √ Genomic DNA Isolation
- $\sqrt{\phantom{a}}$  Differentiation Study and More.....

Maxim is proud to announce that we offer tissue blocks from various normal and cancer patients. Tissue blocks are treated with 10% neutral buffered formalin for 16-24 hours and embedded in high quality, advanced formulated tissue embedding paraffin.

### **Order Information**

The following tissues are available:

<b>Species</b>	<u>Tissue</u>	<u>Unit</u>	Cat. No.	Children
Human	Appendix	Block	TB-50025	000000
Human	Bladder	Block	TB-50012	5 12 02 C
Human	Brain	Block	TB-50017	(A) (B)
Human	Breast	Block	TB-50009	
Human	Cholecyst	Block	TB-50029	1300 000
Human	Colon	Block	TB-50008	
Human	Endometrium Cervix	Block	TB-50030	
Human	Esophagus	Block	TB-50031	A COLOR
Human	Hepatocellular Carcinoma	Block	TB-50032	
Human	Hodgkin's Lymphoma	Block	TB-50006	
Human	Kidney	Block	TB-50033	
Human	Leiomyosarcoma	Block	TB-50027	
Human	Lipoma	Block	TB-50034	
Human	Liver	Block	TB-50015	
Human	Lung	Block	TB-50013	
Human	Lymph Node	Block	TB-50004	
Human	Malignant Fibrohistocytoma	Block	TB-50019	
Human	Malignant Melanoma	Block	TB-50018	
Human	Pancreas	Block	TB-50011	
Human	Placenta	Block	TB-50010	
Human	Prostate	Block	TB-50023	
Human	Salivary Gland Mixed Tumor	Block	TB-50024	
Human	Schwann's Tumor	Block	TB-50028	
Human	Skin	Block	TB-50035	
Human	Small Intestine	Block	TB-50022	
Human	Smooth Muscle	Block	TB-50002	
Human	Spleen	Block	TB-50036	
Human	Stomach	Block	TB-50016	
Human	Striated Muscle	Block	TB-50001	
Human	Testis	Block	TB-50026	
Human	Thyroid	Block	TB-50007	
Human	Tonsil	Block	TB-50005	
Human	Uterine Leiomyoma	Block	TB-50014	



## IX. General Reagents and Buffers

Maxim offers molecular biology reagents and buffers for use in protein or nucleic acid detection/analysis procedures. These solutions are uniquely designed and formulated to offer high performance and excellent resolution. They are made with electrophoresis grade, easy-to-use reagents, which save time and eliminate errors in pH and weight adjustments.

### **Order Information**

<u>Cat.No.</u> <u>BU-00012</u> <u>**50X TAE Buffer**</u>

**Description** Tris-acetate/EDTA solution, 50X concentrated. When the buffer is diluted 50-fold, it will contain

40mM Tris-acetate and 1 mM EDTA; pH 8.3  $\pm$  0.1

Application The buffer is used for preparation of agarose gels and electrophoresis of DNA fragments.

Modified TAE buffer designed to deliver high voltage with low amperage.

Size 1L

Storage Stable at room temperature (18-25°C) for at least one year.

Cat. No. BU-00013 10X TBE Buffer

Description Tris-borate/EDTA solution, 10X concentrated. When the buffer is diluted 10-fold, it will contain

40 mM Tris, 90 mM boric acid and 1 mM EDTA, pH 8.3  $\pm$  0.1.

Application The buffer is used for preparation of agarose gels and electrophoresis of DNA fragments. The

buffer is suitable for sequencing gel, DNA separation.

Size 1L

Storage Stable at room temperature (18-25°C) for at least one year.

Cat. No. BU-00014 6X Gel Loading Buffer

**Description** This solution contains 15% Ficoll, 0.25% bromophenol blue, and 0.25% xylene cyanol FF.

Application This solution is used to prepare nucleic acid for loading onto agarose gels by providing color

and appropriate density to sample.

Size 1.5 ml X 6 tubes

Storage Stable at 4°C or room temperature for at least one year.

<u>Cat. No.</u> <u>BU-00015</u> <u>**10X Gel Loading Buffer**</u>

**Description** This solution contains 50% glycerol, 1mM EDTA, and 0.25% bromophenol blue.

Application This solution is used to prepare nucleic acid for loading onto agarose gels by providing color

and appropriate density to sample.

Size 1.5 ml X 6 tubes

Storage Stable at 4°C or room temperature for at least one year.

<u>Cat. No.</u> <u>BU-00016</u> <u>**10 mg/ml EtBr**</u>

**Description** 10mg/ml solution of ethidium bromide in distilled water.

Application This product is used to visualize DNA and RNA on agarose gels when exposed to UV light.

Ethidium bromide can be added to the agarose gel and / or electrophoresis buffer. Ethidium

bromide is a powerful mutagen and is moderately toxic.

Size 10 ml, amber bottle

Storage Stable at 4°C for at least one year, protect from light.

Cat. No. BU-00017 10X MOPS Buffer

**Description** Contains 10X concentrated 3-[N-morpholinol] propanesulfonic acid and EDTA; pH is adjusted to

7.0 with acetic acid.

Application This buffer is used for preparation of formaldehyde (denaturing) agarose gels and electro-

phoresis RNA samples. This solution is certified DNase/RNase free.

Size 1L

**Storage** Stable at room temperature (18-25°C) for at least one year.



Cat. No. BU-00018 10% SDS Solution

Description Sodium dodecyl sulfate solution. 10% (w/v), is prepared with RNase/DNase-free H<sub>2</sub>O. SDS is

an anionic detergent used for protein denaturation, membrane disruption, and for dissociating

nucleic acid-protein complex.

Application This buffer is used in various procedures for DNA, RNA, and protein analysis. This buffer is

prepared from high quality reagents, and sterile filtered to remove contaminants.

Size 500ml

Storage Stable at room temperature (18-25°C) for at least one year.

Cat. No. BU-00019 20X SSC Buffer

Description 20X SSC solution contains 3M NaCl and 0.3 M sodium citrate which is prepared from high qualify

reagents and is performance tested for quality.

Application This buffer is used in nucleic acid transfer, hybridization applications. It also can serve as a

washing solution.

Size 1L

Storage Stable at room temperature (18-25°C) for at least one year.

<u>Cat. No.</u> <u>BU-00020</u> <u>**0.5M EDTA, pH8.0**</u>

**Description** EDTA is a chelator of metal ions used in many molecular biology solutions and protocols.

**Application** Certified DNAse/RNAse free

Size 500 ml

Storage Stable at room temperature (18-25°C) for at least one year.

Cat. No. BU-00021 Double-distilled H<sub>2</sub>O

**Description** Molecular biology graded H<sub>2</sub>O. Certified DNase free. **Application** Used in many molecular biology solutions and protocols.

Size 1 L

Storage Stable at room temperature (18-25°C) for at least one year.

Cat. No. BU-00022 DEPC Double-distilled H<sub>2</sub>O

**Description** DEPC ddH<sub>2</sub>O. Certified DNase/RNase free.

**Application** Used in many molecular biology solutions and protocols.

Size 1 L

Storage Stable at room temperature (18-25°C) for at least one year.

<u>Cat. No.</u> <u>BU-00029</u> <u>Ampicillin</u>

Description Ampicillin is dissolved in ddH<sub>2</sub>O and is sterilized by filtration through a 0.22-micron filter.

**Application** Used in many molecular biology protocols.

Size 1 ml 50 mg/ml solution

Storage Stable at -25°C for at least one year.

Cat. No. BU-00030 Kanamycin

Description Kanamycin is dissolved in ddH<sub>a</sub>O and is sterilized by filtration through a 0.22-micron filter.

**Application** Used in many molecular biology protocols.

Size 1 ml 10 mg/ml solution

Storage Stable at -20°C for at least one year.

Cat. No. BU-00031 50X Denhardt's Reagent

Description 5g of Ficoll, 5g of polyvinylpyrrolidone, 5g of BSA are dissolved in ddH<sub>2</sub>O to a final volume of

500 ml. Certified DNase free.

**Application** Used in many molecular biology protocols.

Size 50 ml 50X solution

Storage Stable at -20°C for at least one year.



Cat. No. BU-00032 Proteinase K

**Description** 20 mg proteinase K is dissolved in ddH<sub>2</sub>O to final volume of 1 ml.

**Application** Used in many molecular biology protocols.

Size 1 ml 20 mg/ml solution

Storage Stable at -20°C for at least one year.

Cat. No. BU-00033 dNTPs

Description dNTPs is dissolved in ddH<sub>2</sub>O to final concentration of 2.5 mM. Certified DNase free.

**Application** Used in many molecular biology protocols.

Size 1 ml 2.5 mM solution

Storage Stable at -20°C for at least one year.

<u>Cat. No.</u> <u>BU-00034</u> <u>**M13K07**</u>

**Description** Helper Phage M13KO7 with titer > 5 x 10<sup>10</sup> pfu/ml.

ApplicationFor phage rescue.Size100 μl solution

Storage Stable at 4°C for at least one year.

Cat. No. BU-00035 TG1

Description Cultures of E.coli TG1.

**Application** For general use with phage-display vectors.

Size 1 vial

Storage Stable at -20°C for at least one year.

Cat. No. <u>BU-00036</u> <u>**HB2151**</u> **Description** Cultures of E.coli HB2151.

**Application** For general use with phage-display vectors.

Size 1 vial.

Storage Stable at -20°C for at least one year.

<u>Cat. No.</u> <u>BU-00037</u> **pUC18** 

**Description** pUC18, a well-characterized vector.

 $\begin{array}{lll} \textbf{Application} & \text{For general cloning use.} \\ \textbf{Size} & 100 \ \mu l \ 1mg/ml \ solution. \\ \end{array}$ 

Storage Stable at -20°C for at least one year.

<u>Cat. No.</u> <u>BU-00038</u> <u>pUC19</u>

**Description** pUC19, a well-characterized vector.

Application For general cloning use.

Size 100 µl 1mg/ml solution.

Storage Stable at -20°C for at least one year.

<u>Cat. No.</u> <u>BU-00039</u> **pUC119** 

**Description** pUC119, a well-characterized vector.

**Application** For general cloning use. **Size** 100 µl 1mg/ml solution.

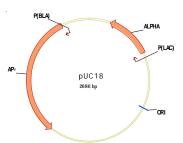
Storage Stable at -20°C for at least one year.

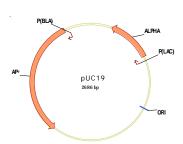
<u>Cat. No.</u> <u>BU-00040</u> **pBR322** 

**Description** pBR322, a well-characterized vector.

ApplicationFor general cloning use.Size $100 \mu l$  1mg/ml solution.

Storage Stable at -20°C for at least one year.





#### **DNA Molecular Markers**

Cat. No. BU-00023 100 bp Ladder

**Description** The 100 bp ladder progresses from 100 bp to 1000 bp in

exact 100 bp increments.

Ladder is accompanied by 200 µl 6X loading buffer.

**Application** DNA/RNA gel electrophoresis.

Size 0.5 ml (100 gels) Storage Store at 4°C.

Cat. No. BU-00024 20 bp Ladder

**Description** The 20 bp ladder progresses from 20 bp to 1000

bp in exact 20 bp increments. Ladder is accompanied by

200  $\mu I$  6X loading buffer.

**Application** DNA/RNA gel electrophoresis.

Size 0.5 ml (100 gels) Storage Store at 4°C.

Cat. No. BU-00025 1 kb Ladder

**Description** The 1000 bp ladder progresses from 1000 bp

to 10,000 bp in exact 1000 bp increments.

Ladder is accompanied by 200 µl 6X loading buffer.

Application DNA/RNA gel electrophoresis.

Size 0.5 ml (100 gels) Storage Store at 4°C.

### **Agarose**

<u>Cat. No.</u> <u>BU-00027</u> <u>Agarose</u> **Description** Agarose for general purpose

**Application** Both conventional electrophoresis and pulse

field electrophoresis.

**Size** 100 g

**Storage** Store at room temperature.

Cat. No. BU-00028 Agarose

**Description** Agarose for general purpose

**Application** Both conventional electrophoresis and pulse

field electrophoresis.

**Size** 500 g

**Storage** Store at room temperature.

### **PCR/MPCR Optimization**

Cat. No. BU-00001 GC Normalizer

**Description** The GC Normalizer was specially formulated

chemicals for a PCR reaction compatible buffer, 10X.

**Application** PCR Optimization.

Size 3.0 ml

Storage Store at 4°C.

<u>Cat. No.</u> <u>BU-00002</u> <u>**DMSO**</u>

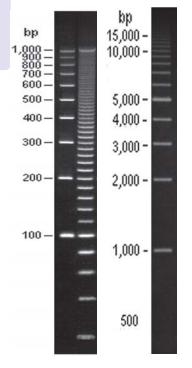
**Description** The DMSO has been quality controlled to assure

its performance in a PCR reaction.

**Application** PCR Optimization.

Size 1.0 ml

Storage Store at 4°C.



**DNA M.W. Marker** 

# Maxim's DNA molecular weight markers have the following features:

 $\sqrt{}$  Bands progress in even, easy-to-remember increments.

 $\sqrt{}$  Ladders come with a 6X loading buffer.  $\sqrt{}$  Wide range of sizes available: 20 bp,

100 bp, and 1 kb.

### Contents and Storage:

All DNA molecular weight markers are accompanied by 6X loading buffer. Enough ladder is provided for 100 applications. DNA molecular weight markers are stable for 6 months when stored at 4°C.



Cat. No. BU-00003 10X MPCR Buffer 1

**Description** This 10X MPCR Buffer 1 is formulated to offer a

balanced Mg<sup>++</sup> and pH in a proprietary buffer.

**Application** PCR/ MPCR Optimization.

Size 1.0 ml

Storage Store at 4°C or -20°C.

Cat. No. BU-00004 10X MPCR Buffer 2

**Description** This 10X MPCR Buffer 2 is formulated to offer a

balanced Mg<sup>++</sup> and pH in a proprietary buffer.

**Application** PCR/ MPCR Optimization.

Size 1.0 ml

Storage Store at 4°C or -20°C.

Cat. No. BU-00005 10X MPCR Buffer 3

**Description** This 10X MPCR Buffer 3 is formulated to offer a

balanced Mg<sup>++</sup> and pH in a proprietary buffer.

**Application** PCR/ MPCR Optimization.

Size 1.0 ml

Storage Store at 4°C or -20°C.

Cat. No. BU-00006 10X MPCR Buffer 4

**Description** This 10X MPCR Buffer 4 is formulated to offer a

balanced  $\mbox{Mg}^{\mbox{\tiny ++}}$  and pH in a proprietary buffer.

**Application** PCR/ MPCR Optimization.

Size 1.0 ml

Storage Store at 4°C or -20°C.

Cat. No. BU-00007 10X MPCR Buffer 5

**Description** This 10X MPCR Buffer 5 is formulated to offer a

balanced Mg<sup>++</sup> and pH in a proprietary buffer.

**Application** PCR/ MPCR Optimization.

Size 1.0 ml

Storage Store at 4°C or -20°C.

Cat. No. BU-00008 10X MPCR Buffer 6

**Description** This 10X MPCR Buffer 6 is formulated to offer a

balanced Mg<sup>++</sup> and pH in a proprietary buffer.

**Application** PCR/ MPCR Optimization.

Size 1.0 ml

Storage Store at 4°C or -20°C.

Cat. No. BU-00009 10X MPCR Buffer 7

**Description** This 10X MPCR Buffer 7 is formulated to offer a

balanced Mg++ and pH in a proprietary buffer.

**Application** PCR/ MPCR Optimization.

Size 1.0 ml

Storage Store at 4°C or -20°C.



Cat. No. BU-00010 10X MPCR Buffer 8

**Description** This 10X MPCR Buffer 8 is formulated to offer

a balanced Mg++ and pH in a proprietary buffer.

**Application** PCR/ MPCR Optimization.

Size 1.0 ml

Storage Store at 4°C or -20°C.

Cat. No. BU-00011 10X MPCR Buffer 9

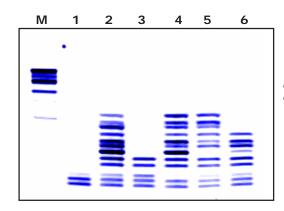
**Description** This 10X MPCR Buffer 9 is formulated to offer

a balanced Mg++ and pH in a proprietary buffer.

**Application** PCR/ MPCR Optimization.

Size 1.0 ml

Storage Store at 4°C or -20°C.



#### Gene Expression of Human Keratinocyte cDNA with different MPCR Buffers using Maxim MPCR kit MP-70228

Lane M: DNA M.W. Marker

Lane 1: MPCR Buffer #2 (BU-00004) Lane 2: MPCR Buffer #3 (BU-00005)

Lane 3: MPCR Buffer #4 (BU-00006) Lane 4: MPCR Buffer #5 (BU-00007)

Lane 5: MPCR Buffer #6 (BU-00008)

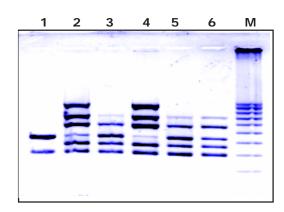
Lane 6: MPCR Buffer #7 (BU-00009)

#### Gene Expression of Mouse Brain cDNA with different MPCR Buffers using Maxim MPCR kit MP-70103

Lane M: DNA M.W. Marker

Lane 1: MPCR Buffer #2 (BU-00004) Lane 2: MPCR Buffer #3 (BU-00005) Lane 3: MPCR Buffer #4 (BU-00006) Lane 4: MPCR Buffer #5 (BU-00007)

Lane 5: MPCR Buffer #6 (BU-00008) Lane 6: MPCR Buffer #7 (BU-00009)





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