GeneAll®

Catalog 2018/19

Innovative Life Science System

Customer & Technical Support

Should you have any further questions, do not hesitate to contact us.

We appreciate your comments and advice.

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About GeneAll

With the advance in molecular biological techniques, researchers have preferred the commercial ready-made kits to lab-made reagents in order to concentrate on doing research itself rather than making reagents. GeneAll® DNA and RNA Purification kit series are basic materials in molecular biological experiments and offer fast, accurate, convenient and reproducible methods. Every GeneAll® product is manufactured under strictly clean condition and controlled thoroughly from lot to lot, and we proudly guarantee the stable and consistent quality. GeneAll® SV column contains silica membrane that will bind DNA and easily apply to both centrifugation and vacuum protocols. Purification step is so simple, bind-wash-elute, that is all. Under high salt condition, DNA bind to silica membrane and impurities pass through membrane into a collection tube. The membranes are washed with an ethanol-containing buffer to remove any residual of proteins, cellular debris, salts, remnant of agarose, enzymatic reaction components and etc. Finally DNA is released into a clean collection tube with water or low ionic strength buffer.

GeneAll® 2018 / 19 Catalog

Visit www.geneall.com or www.geneall.co.kr for FAQ, Q&A and more information.

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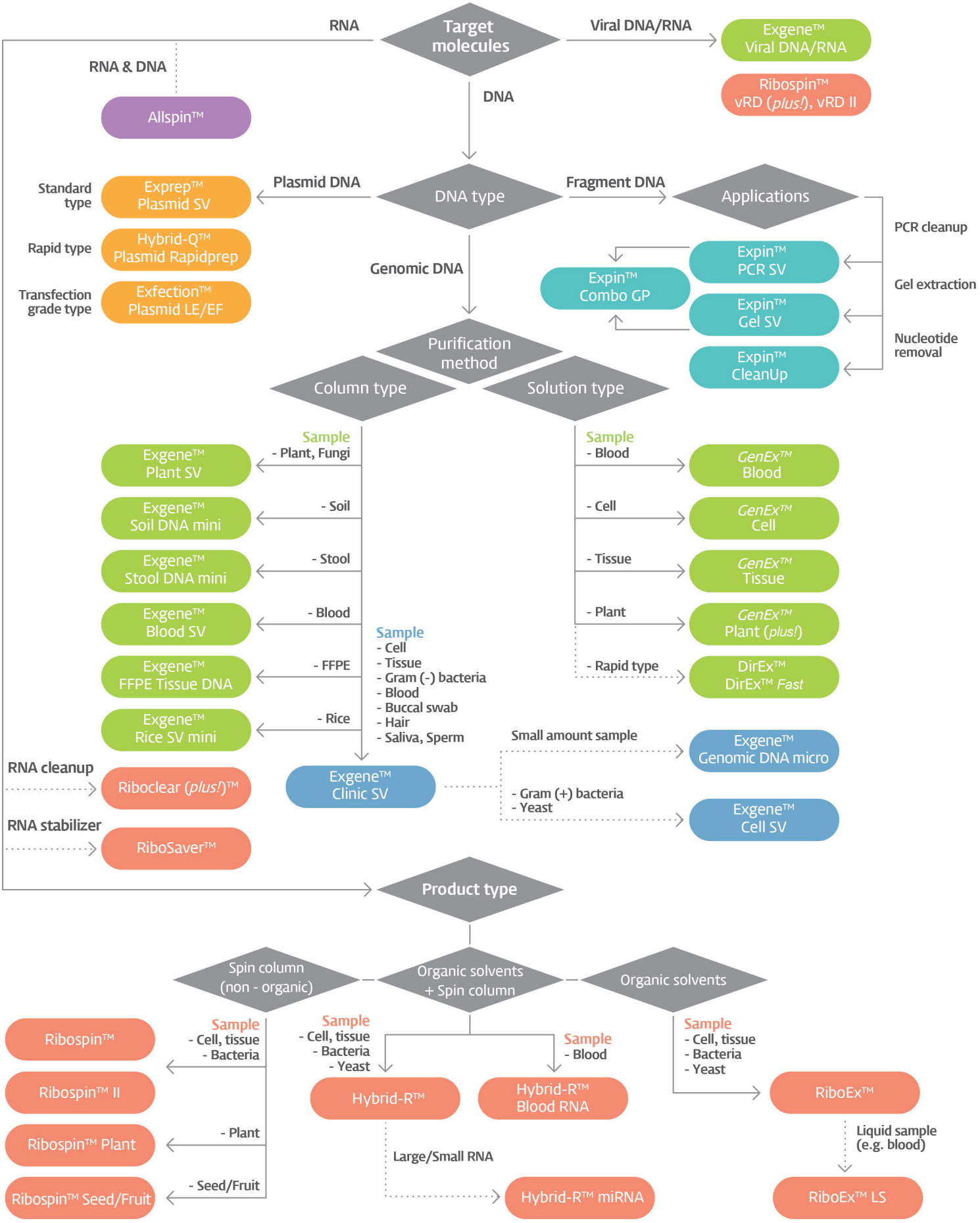


Selection Guide

For plasmid DNA Purification

Hybrid-Q™ / Exprep™ / Exfection™ Series

GeneAll® Plasmid DNA Purification Systems utilize glass microfiber membranes based on the modified alkaline lysis method. Hybrid-Q™ Plasmid Rapidprep with new patented EzClear™ Filter provides the alternative methods for standard or rapid preparation of plasmid DNA depending on plasmid copy number, host strain, culture medium and culture volume.

Exfection™ Plasmid LE (Low Endotoxin) and EF (Endotoxin-Free) provide simple and fast method for the purification of plasmid DNA with low endotoxin contaminants. Endotoxins present in the cell membrane of gram-negative bacteria are common contaminants in plasmid preparations and can significantly reduce transfection efficiencies. Exfection™ series can be used for the transfection of most cell lines through the removal of endotoxins: advanced phase separation and endotoxin removal washing.

		Small Scale			Large Scale ***	
	Hybrid-Q™ Plasmid Rapidprep *	Exprep™ Plasmid SV mini	Exfection™ Plasmid LE mini (Low Endotoxin)	Exprep™ Plasmid SV Midi	Exfection™ Plasmid LE Midi (Low Endotoxin)	Exfection™ Plasmid EF Midi (Endotoxin Free) **
Specifications						
Format	Spin	Spin / Vacuum	Spin / Vacuum	Spin / Vacuum	Spin / Vacuum	Spin
Recommended sample volume	~ 5 ml	~ 5 ml	~ 5 ml	~ 50 ml	~ 50 ml	~ 100 ml
Maximum sample volume	10 ml	10 ml	10 ml	100 ml	100 ml	150 ml
Clearing of lysate	EzClear™	Centrifuge	Centrifuge	EzClear™	EzClear™	EzClear™
Preparation time	< 10 min	< 23 min	< 30 min	< 50 min	< 50 min	< 70 min
Maximum loading volume	600 μℓ	800 μℓ	800 μℓ	15 ml	15 ml	15 ml
Binding capacity	30 μg	30 μg	30 μg	300 μg	300 μg	300 μg
The level of endotoxin	-	-	< 10 EU / μg	-	< 10 EU / μg	< 0.1 EU / μg
Recovery	85 ~ 95%	85 ~ 95%	80 ~ 95%	80 ~ 95%	85 ~ 95%	75 ~ 90%
Minimum elution volume	40 μℓ	40 μℓ	50 μℓ	500 μℓ	500 μℓ	500 μℓ
Applications						
Endotoxin free	-	-	-	-	-	■
Cell transfection	□	□	■	□	■	■
in vitro Transcription	■	■	■	■	■	■
Cloning	■	■	■	■	■	■
Automatic sequencing	■	■	■	■	■	■
PCR	■	■	■	■	■	■
Restriction digestion	■	■	■	■	■	■
Transformation	■	■	■	■	■	■

■ *Recommended* / □ *Recomended with additional preparation step*

** Hybrid-Q™ Plasmid Rapidprep provides the alternative protocols upon plasmid copy number, host strain, culture medium, and culture volume.*

*** Exfection™ EF kit is suitable for the transfection of primary or sensitive cells.*

**** GeneAll® SV Midi / MAXI kits require the centrifuge which has a swing-bucket rotor and ability of 4,000 x g at least.*

01. Plasmid DNA Purification System

Hybrid-Q™ Plasmid Rapidprep

For the rapid purification of high / low-copy plasmid DNA

Description

Hybrid-Q™ Plasmid Rapidprep kit provides two methods for easy and rapid preparation of plasmid DNA from the mini scale bacterial cells. Plasmid DNA can be prepared from up to 10 ml of overnight culture by conventional miniprep method with standard protocol. Alternatively, up to 3 ml of sample can be processed by rapid protocol in just 10 min with new patented EzClear™ Filter and simultaneous processing of multiple samples can be easily performed.
Up to 30 μg of pure plasmid can be purified using Hybrid-Q™ Plasmid Rapidprep kit and this pure plasmid DNA is ready for PCR, cloning, fluorescent sequencing, synthesis of labeled hybridization probes, cell transfection, electroporation and enzymatic restriction analysis without further manipulation.

Features and Benefits

- Spin column format
- Rapid purification with EzClear™ Filter : complete in just 10 min
- Stable and consistent result
- 30 μg of binding capacity and high purity
- Compatible with *endA*$^+$ strains
- No use of organic solvents
- Ready for use in fluorescent sequencing, cloning, hybridization, electroporation and other enzymatic manipulation

Hybrid-Q™ Plasmid Rapidprep

Format : Column Type Q (mini), (with 2.0 ml collection tube)
+ EzClear™ Filter (mini), (with 2.0 ml collection tube)

Sample volume (High copy) : 2 ~ 5 ml LB

Max. sample volume (Low copy) : 10 ml LB

Max. loading volume of EzClear™ Filter : 600 μℓ

Max. loading volume of spin column : 800 μℓ

Binding capacity : 30 μg

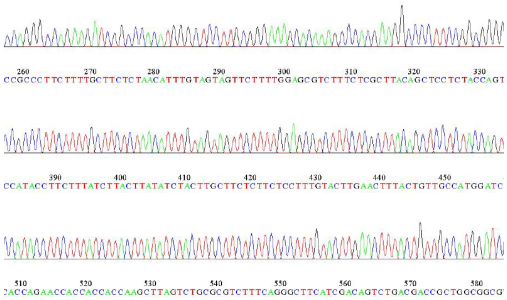
Recovery rate : 85 ~ 95%

Min. elution volume : 40 μℓ

EzClear™ Filter
New patented EzClear™ Filter facilitates the clearance of the lysate by filtration instead of tedious centrifugation which has been used widely in traditional methods.
In the rapid protocol, EzClear™ Filter is assembled with GeneAll® spin column, and this column stack makes it one-step the clearance of lysate and the binding of plasmid DNA to spin column membrane.

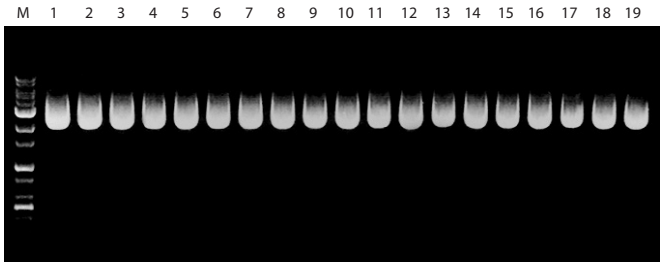
Cat. No.	Products	Type	Size
100-150	Hybrid-Q™ Plasmid Rapidprep	mini / spin	50
100-102	Hybrid-Q™ Plasmid Rapidprep	mini / spin	200

DNA Automated Sequencing Analysis



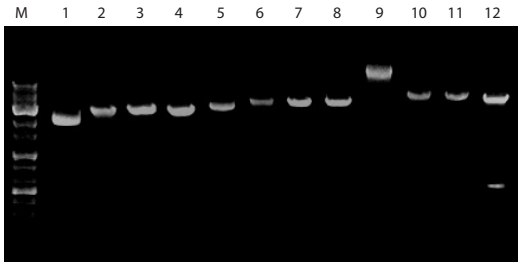
Plasmid DNA prepared using Hybrid-Q™ delivers long and accurate (> 99% at 700 bp) reads.
* Sequencing analysis was performed on an ABI Prism™, model 377, version 3.2 sequencer

Stable and Reproducible Result



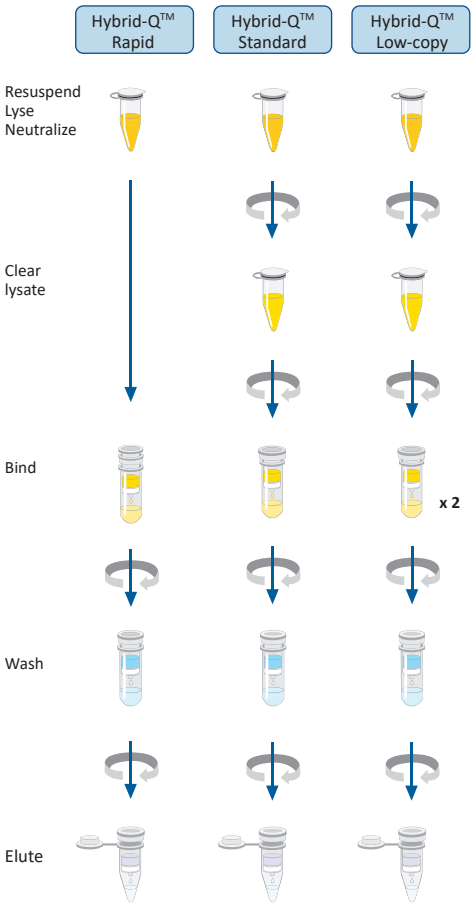
Plasmid DNA isolated from overnight cultures of pUC18-transformed DH5α using Hybrid-Q™.
Each lane represents 4 μℓ of purified supercoiled plasmid out of 50 μℓ of eluates.
Lane M : 1 Kb ladder

Compatibility Test with Restriction Enzymes



Several kinds of plasmid DNA purified with Hybrid-Q™ subjected to digestion by restriction enzyme.
Lane M : 1 Kb ladder
Lane 1 : pUC18, host DH10B
Lane 2 : pUC18, host DH10B, digested with EcoRI
Lane 3 : pUC18, host DH10B, digested with HindIII
Lane 4 : pUC18, host DH10B, digested with SmaI
Lane 5 : pQE30, host BL21
Lane 6 : pQE30, host BL21, digested with EcoRI
Lane 7 : pQE30, host BL21, digested with SalI
Lane 8 : pQE30, host BL21, digested with SmaI
Lane 9 : pACYC184, host JM109
Lane 10 : pACYC184, host JM109, digested with EcoRI
Lane 11 : pACYC184, host JM109, digested with NcoI
Lane 12 : pACYC184, host JM109, digested with PvuII

Procedures



Component list
Column Type Q (with collection tube)
EzClear™ Filter (with collection tube)
Buffer S1
Buffer S2
Buffer G3
Buffer AW
Buffer PW
Buffer EB
RNase A (20 mg / ml)
Protocol Handbook

Exprep™ Plasmid SV

For the purification of plasmid DNA

Description

Exprep™ Plasmid SV DNA Purification kit provides a rapid and convenient method for the small and medium scale preparations of plasmid DNA from bacterial cells and it is used to isolate and purify any plasmids from any *E. coli* strains. Exprep™ Plasmid SV eliminates the need of organic solvent extraction and alcohol precipitation, allowing rapid and convenient preparation from many samples simultaneously. Exprep™ Plasmid SV kit can yield up to 30 μg (mini) of highly purified plasmid DNA and it can be applicable directly for PCR, cloning, automated sequencing, synthesis of labeled hybridization probes and other enzymatic reactions without further manipulation.

Features and Benefits

- Spin or vacuum column format
- Stable and consistent result
- Fast and simple procedure : complete in 25 minutes
- High purity : A_{260} / A_{280} = 1.8 ~ 2.0
- Compatible with *endA*$^{+}$ strains
- No use of organic solvents
- Ready for use in enzymatic manipulation and automated sequencing

Exprep™ Plasmid SV mini

Format : Column Type Q (mini), (with 2.0 ml collection tube)

Sample volume : 2 ~ 10 ml LB

Preparation time : 23 min

Typical yield : 10 ~ 30 μg

Elution volume : 40 ~ 200 μℓ

Midi

Format : Column Type Q (Midi), (with 50 ml collection tube)

Sample volume : 50 ~ 100 ml LB

Preparation time : 50 min

Typical yield : 100 ~ 300 μg

Elution volume : 400 ~ 2000 μℓ

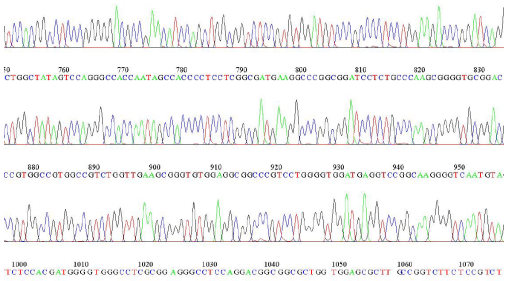
MixVu™

Complete mixing is important for successful alkaline lysis. As the volume of lysate grows in large scale preparation such as midi or maxi, a partial variation of pH in lysate can be taken place. It is due to high viscosity of lysate and leads to incomplete mixing, followed by inefficient cell lysis and poor yields. Use of MixVu™ would prevent this handling error, and help prepare the plasmid successfully. MixVu™ added Buffer S1 / P1 is colorless. After the addition of Buffer S2 / P2, the color will turn blue as mixing. Whole blue of the lysate ensures that the lysate is at alkaline pH. And the lysate will be colorless after the addition of Buffer G3 / P3. The lysate should be mixed until it became thoroughly colorless to ensure complete neutralization.

Cat. No.	Products	Type	Size
101-150	Exprep™ Plasmid SV	mini / spin / vacuum	50
101-102	Exprep™ Plasmid SV	mini / spin / vacuum	200
101-226	Exprep™ Plasmid SV	Midi / spin / vacuum	26
101-201	Exprep™ Plasmid SV	Midi / spin / vacuum	100

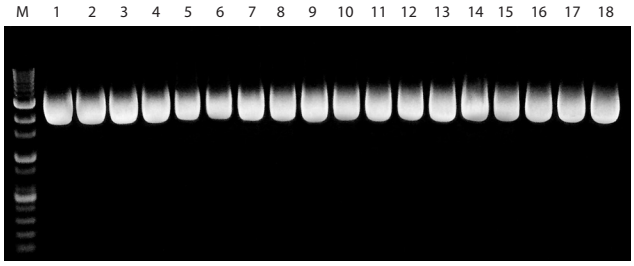
** Midi kit contains indicator "MixVu™" for successful alkaline lysis.*

DNA Automated Sequencing Analysis



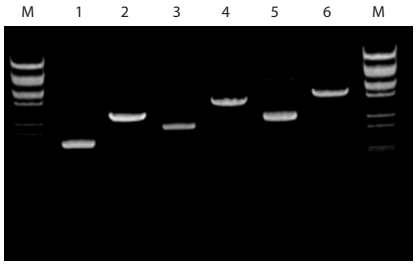
Plasmid DNA prepared using Exprep™ Plasmid SV kit delivers long, accurate (> 99% at 700 bp) reads.
* Sequencing analysis was performed on an ABI Prism™, model 377, version 3.2 sequencer

Stable and Reproducible Result



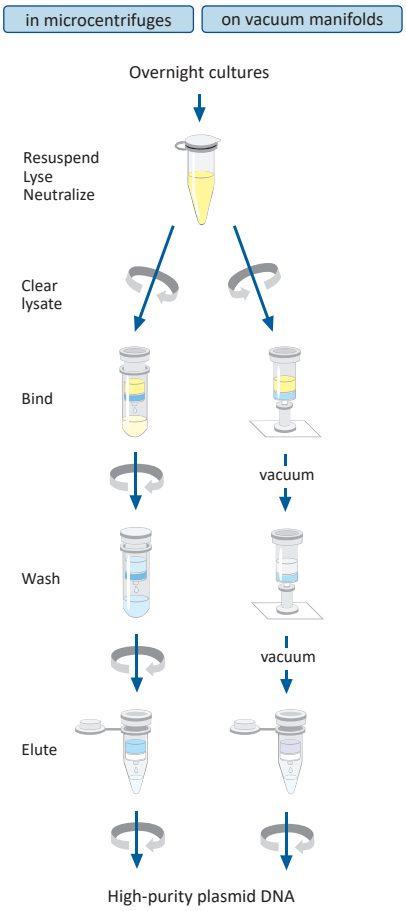
Plasmid DNA was isolated from overnight cultures of pUC18-transformed DH10B cells using Exprep™ Plasmid SV kit. Each lane represents 4 μℓ of purified supercoiled plasmid DNA out of 50 μℓ of eluates.
Lane M : 1 kb ladder

Compatibility Test with Restriction Enzymes



Several kinds of plasmid DNA purified with Exprep™ Plasmid SV kit were subjected to digestion by restriction enzyme.
Lane M : Lambda-BatPI
Lane 1 : pUC18, host INVaF
Lane 2 : pUC18, host INVaF, digested with XbaI
Lane 3 : pQE30, host JM109
Lane 4 : pQE30, host JM109, digested with SmaI
Lane 5 : pBluescript II SK (+), host XL1 blue
Lane 6 : pBluescript II SK (+), host XL1 blue, digested with XbaI

Procedures



Component list

Column Type Q (with collection tube)
Collection tube (Midi only)
Buffer S1
Buffer S2
Buffer S3
Buffer AW
Buffer PW
Buffer EB
MixVu™ Solution (Midi only)
RNase A (20 mg / ml)
Protocol Handbook

* **GeneAll®** Midi kits require the centrifuge which has swing bucket rotor and ability of 4,000 x g at least.

Exfection™ Plasmid LE / EF

For the preparations of extremely pure plasmid DNA

Description

Exfection™ plasmid LE (Low Endotoxin) and EF (Endotoxin-Free) provide simple and fast method for the purification of plasmid DNA with low endotoxin contaminants. Endotoxins (also known as lipopolysaccharides, LPS) are present in the cell membrane of gram-negative bacteria, such as *Escherichia coli*. It is a common contaminant in plasmid preparations and can significantly reduce transfection efficiencies, if not removed during DNA preparations. These kits use two methods for the removal of endotoxins : advanced phase separation and endotoxin removal washing. Endotoxin levels can be reduced to 0.1 EU / μg with Exfection™ EF and to 10 EU / μg with Exfection™ LE.

Prepared plasmid DNA can be used for the transfection of most of cell lines in addition to most of molecular biological applications.

Features and Benefits

- Spin column format based on glassfiber membrane
- Convenient clearing of lysate with EzClear™ Filter (Midi)
- High plasmid recoveries with high purity
- Fast preparation time and simple procedure
- High transfection efficiency in most cell-lines
- No use of organic solvents

Exfection™ Plasmid LE mini

Format : Column Type Qe (mini), (with 2.0 ml collection tube)

Sample volume : 2 ~ 10 ml LB

Lysate clearing : Centrifugation

Preparation time : < 30 min

Binding capacity : 30 μg

Endotoxin levels : < 10 EU / μg

Min. elution volume : 50 μℓ

LE Midi

Format : Column Type E (Midi), (with 50 ml collection tube)

Sample volume : 5 ~ 100 ml LB

Lysate clearing : EzClear™ Filter (Midi)

Preparation time : < 50 min

Binding capacity : 300 μg

Endotoxin levels : < 10 EU / μg

Min. elution volume : 500 μℓ

EF Midi

Format : Column Type E (Midi), (with 50 ml collection tube)

Sample volume : 30 ~ 150 ml LB

Lysate clearing : EzClear™ Filter (Midi)

Preparation time : < 70 min

Binding capacity : 300 μg

Endotoxin levels : < 0.1 EU / μg

Min. elution volume : 500 μℓ

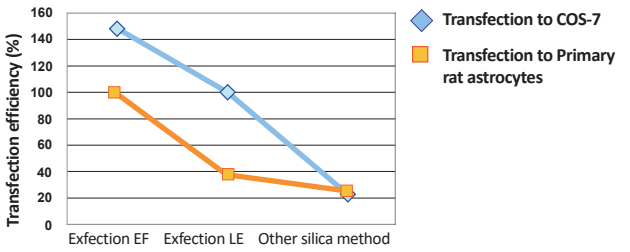
Applications : Cell transfection of most cell lines
Enzymatic modifications
Library construction
in vitro transcription / translation
High quality sequencing
Cloning
Most molecular biological experiments

In addition to LE series;
Cell transfection of primary, sensitive and / or suspension cell lines
Gene silencing
Microinjection

Cat. No.	Products	Type	Size
111-150	Exfection™ Plasmid LE	mini / spin / vacuum	50
111-102	Exfection™ Plasmid LE	mini / spin / vacuum	200
111-226	Exfection™ Plasmid LE	Midi / spin / vacuum	26
111-201	Exfection™ Plasmid LE	Midi / spin / vacuum	100
121-220	Exfection™ Plasmid EF	Midi / spin	20
121-201	Exfection™ Plasmid EF	Midi / spin	100

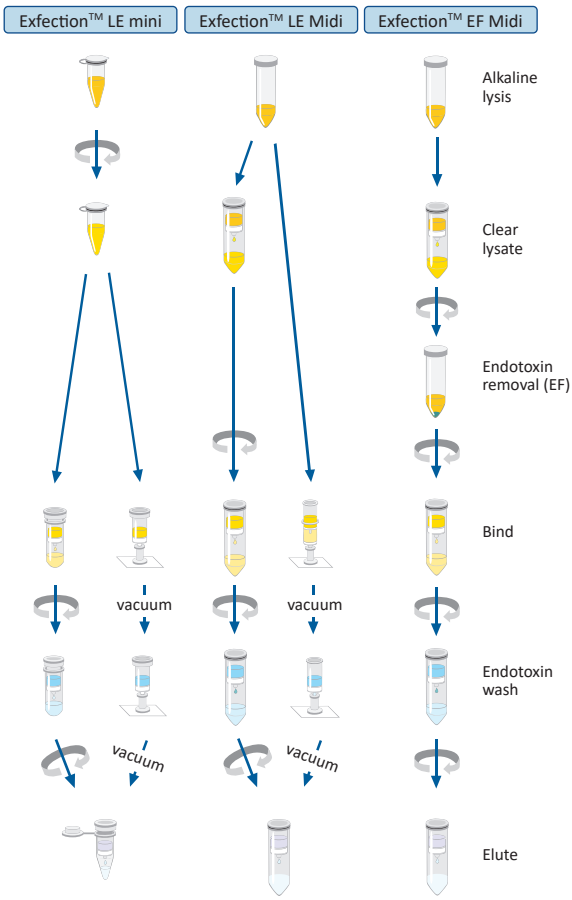
** Midi kit contains indicator "MixVu™" for successful alkaline lysis.*

Transfection Efficiency



pGEFP-N3 prepared by the methods indicated were transfected to COS-7 (◆) and primary rat hippocampal astrocytes (■) by liposomal method. Transfection efficiencies were determined by scoring the number of green fluorescent cells 48 hours post transfection. Average transfection efficiencies are expressed as percentages relative to the efficiency obtained with DNA prepared using Exfection LE (100%) for COS-7 and Exfection™ EF (100%) for primary cells, respectively.

Procedures



Component list

Column Type Qe / E (with collection tube)
EzClear™ Filter (with collection tube), (Midi only)
Collection tube (Midi only)
Buffer P1
Buffer P2
Buffer G3 / P3
Buffer EW1
Buffer EW2
Buffer ER (EF only)
Buffer EG (EF only)
Buffer EF
MixVu™ Solution (Midi only)
RNase A (20 mg / ml)
Protocol Handbook

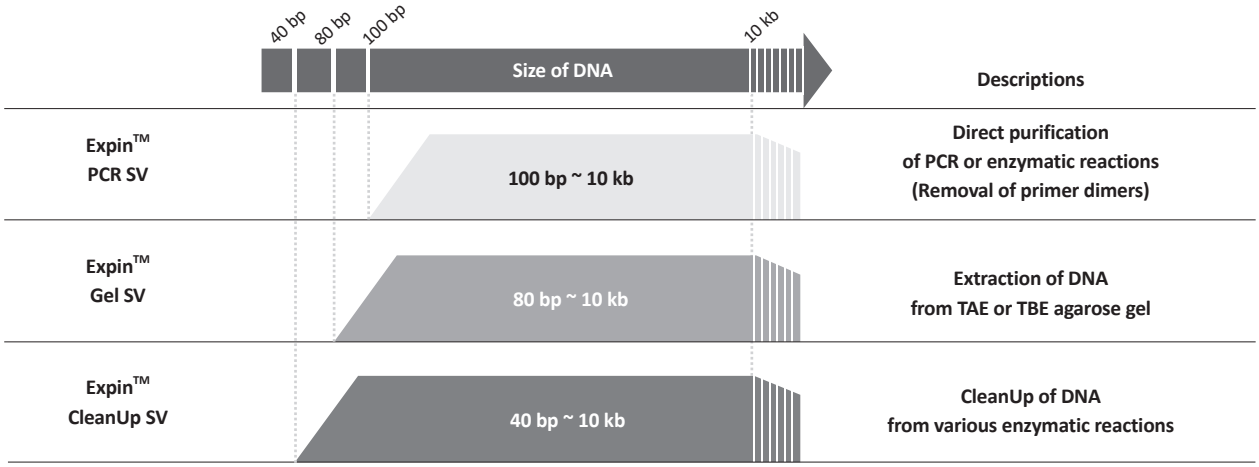
* **GeneAll**® Midi kits require the centrifuge which has a swing-bucket rotor and ability of 4,000 x g at least.

Selection Guide

For Fragment DNA Purification

Expin™ Series

Expin™ series provide reliable and fast methods for the purification of fragment DNA from agarose gel and PCR or enzymatic reaction mixtures. Expin™ Gel SV takes advantage of glass fiber membrane to recover DNA of 80 bp to 10 kb from most grades of agarose gel in yields reaching 85%. Expin™ PCR SV is used to recover DNA of 100 bp to 10 kb from PCR or enzymatic reaction mixtures and very effective to the removal of PCR primer dimer. Expin™ Combo GP kit is the combined product of Expin™ Gel SV and Expin™ PCR SV. Expin™ CleanUp SV is designed for fast and simple method for purification of fragment DNA of 40 bp to 10 kb from various enzymatic reactions in just 6 minutes.



** Expin™ SV series consist of Gel, PCR and CleanUp SV kit. Each kit is optimized for efficient recovery of DNA and removal of contaminants in each specific application.*

	Expin™ PCR SV	Expin™ Gel SV	Expin™ CleanUp SV	Expin™ Combo GP *
Specifications				
Format	Spin / Vacuum	Spin / Vacuum	Spin / Vacuum	Spin / Vacuum
Starting material	100 μℓ PCR reactions	200 mg gel slice	50 μℓ enzyme reactions	100 μℓ PCR reactions or 200 mg gel slice
Fragment DNA size	100 bp ~ 10 kb	80 bp ~ 10 kb	40 bp ~ 10 kb	80 bp ~ 10 kb
Recovery Rate	90 ~ 95%	70 ~ 85%	80 ~ 95%	70 ~ 95%
Maximum binding capacity	10 μg	10 μg	10 μg	10 μg
Preparation time	< 6 min	< 15 min	< 6 min	< 6 min ~ 15 min
Applications				
PCR cleanup	■	-	□	■
Gel extraction	-	■	-	■
Nucleotide removal	■	■	■	■

■ *Recommended /* □ *Suitable but not optimized*

** Expin™ Combo GP kit is the combined product of Expin™ Gel SV and Expin™ PCR SV.*

02. Fragment DNA Purification System

Expin™ Gel SV

For gel extraction of DNA fragments from agarose gel

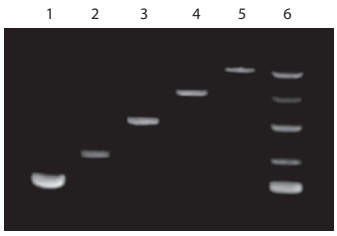
Description

DNA extraction from agarose gel is a common technique for isolation of specific fragments from reaction mixtures. However, the conventional methods either fail to completely remove agarose, shear the DNA or result in low yields. Expin™ Gel SV kit takes advantage of glass fiber membrane to recover DNA of 80 bp to 10 kb from most grades of agarose gel in yields reaching 85%.

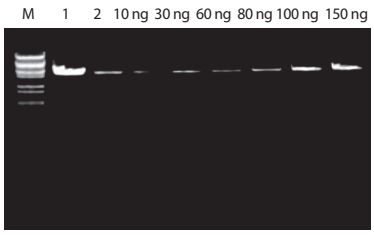
Features and Benefits

- Spin or vacuum column format
- DNA extraction from standard and low-melting agarose (TAE, TBE)
- Stable and consistent result
- Rapid and convenient procedure
- High purity : A_{260} / A_{280} = 1.8 ~ 2.0
- Recovery rate : 70 ~ 85% (80 bp ~ 10 kb)
- No use of organic solvents
- Complete removal of ethidium bromide
- pH indicator in binding buffer
- Ready for ligation, sequencing, labeling, PCR, enzyme assay and etc.

Extraction Efficiency

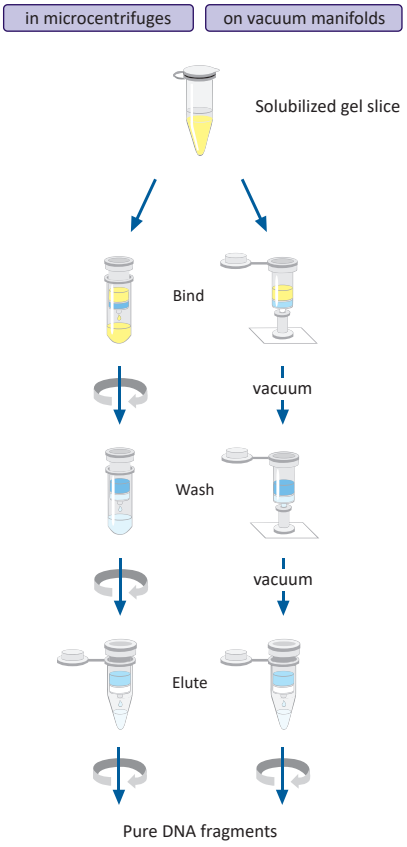


DNA fragments resolved on 1% agarose gel in TAE buffer.
Lane 1 ~ 5 : Before extraction with the Expin™ Gel SV kit.
Lane 6 : Pooled after extraction
* Fragment size : (up) 5.0 kb, 2.3 kb, 1.3 kb, 782 bp, 466 bp (bottom)



Quantities of extracted 4.5 kb DNA fragment correspond to 1 / 5 of the DNA obtained by purification from 0.5 μg starting DNA with a recovery of 85%. Samples were run on 1% TAE agarose gel.
Lane M : Lambda-BstP1
Lane 1 : Total amount before extraction (0.5 μg)
Lane 2 : 1 / 5 amount after extraction
[90 ng compared to known amount (10 ~ 150 ng) DNA]
* Total obtained amount of DNA = 90 x 5 = 450 ng approximately (90%)

Procedures



Component list

Column Type D (with collection tube)
Buffer GB
Buffer NW
Buffer EB
Protocol Handbook

Cat. No.	Products	Type	Size
102-150	Expin™ Gel SV	mini / spin / vacuum	50
102-102	Expin™ Gel SV	mini / spin / vacuum	200

Expin™ PCR SV

For the purification of DNA from PCR or other enzymatic reactions

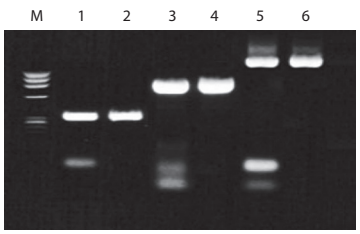
Description

Expin™ PCR SV kit provides fastest and easiest method for reliable purification of DNA from PCR products or other enzymatic reaction mixtures without agarose gel electrophoresis. In this kit, glass fiber membrane is used to recover DNA of 100 bp to 10 kb, which is free of primer dimers, nucleotides, enzymes and salts in yields reaching 95%.
No organic extraction and alcohol precipitation are needed and multiple samples can be easily processed simultaneously.

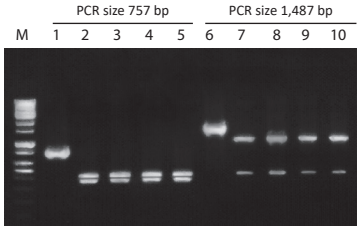
Features and Benefits

- Spin or vacuum column format
- Remove PCR primers and contaminants
- Stable and consistent result
- Fast and simple : completed just in 6 minutes
- High purity : A_{260} / A_{280} = 1.8 ~ 2.0
- Recovery rate : 90 ~ 95% (100 bp ~ 10 kb)
- No use of organic solvents
- Applied directly in ligation, automated sequencing, restriction enzyme assay, PCR, *in vitro* transcription, hybridization, microarray assay and other enzymatic reactions

Extraction Efficiency

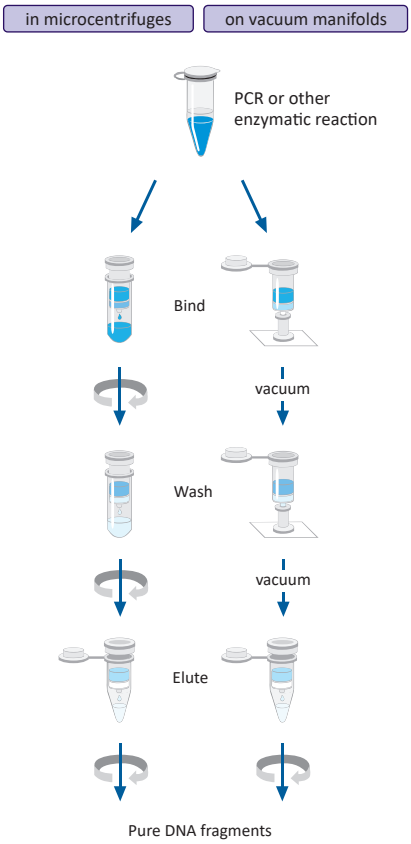


PCR products which have several length of fragment were purified with Expin™ PCR SV kit.
Enzyme, salts and small fragments such as primer dimers were effectively removed by purification.
PCR product sizes : 312 bp (Lane 1, 2), 850 bp (Lane 3, 4), 1.6 kb (Lane 5, 6).
Lane M : phi-x174-HaeIII
Lane 1, 3, 5 : Before purification
Lane 2, 4, 6 : After purification



PCR products purified with Expin™ PCR SV kit were subjected to digestion with SmaI (Lane 2 ~ 5, 7 ~ 10).
Lane 1, 6 represent undigested DNA.
Lane M : 1 kb ladder

Procedures



Component list

Column Type D (with collection tube)
Buffer PB
Buffer NW
Buffer EB
Protocol Handbook

Cat. No.	Products	Type	Size
103-150	Expin™ PCR SV	mini / spin / vacuum	50
103-102	Expin™ PCR SV	mini / spin / vacuum	200

Expin™ CleanUp SV

For oligonucleotide and DNA cleanup from enzymatic reactions

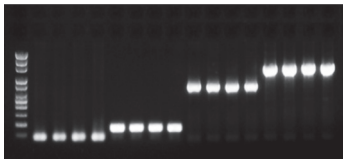
Description

Expin™ CleanUp SV kit is designed for fast and simple method for purification of fragment DNA of 40 bp to 10 kb from various enzymatic reactions in just 6 minutes. Purified DNA with this kit is free of nucleotides, enzymes and salts in yields reaching 95%, and is ready for automated sequencing, cloning, *in vitro* transcription, microarray and other enzymatic reactions.

Features and Benefits

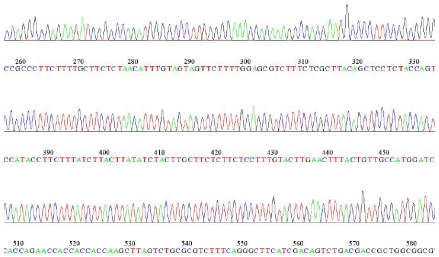
- Spin or vacuum column format
- Stable and consistent result
- Fast and simple : completed just in 6 minutes
- High purity : A_{260} / A_{280} = 1.8 ~ 2.0
- Recovery rate : 80 ~ 95% (40 bp ~ 10 kb)
- No use of organic solvents
- Applied directly in ligation, automated sequencing, restriction enzyme assay, PCR, *in vitro* transcription, hybridization, microarray assay and other enzymatic reactions

Consistent Result from Various Size



PCR Products of several sizes were purified using Expin™ CleanUp SV kit. Average recover-yield was about 85%. The sizes of fragments are 70, 176, 757 and 1487 bp from left to right on 1% agarose gel.
Lane M : 1 kb ladder
Lane 1, 5, 9, 13 : Before purification
Lane 2 ~ 4, 6 ~ 8, 10 ~ 12, 14 ~ 16 : After prification

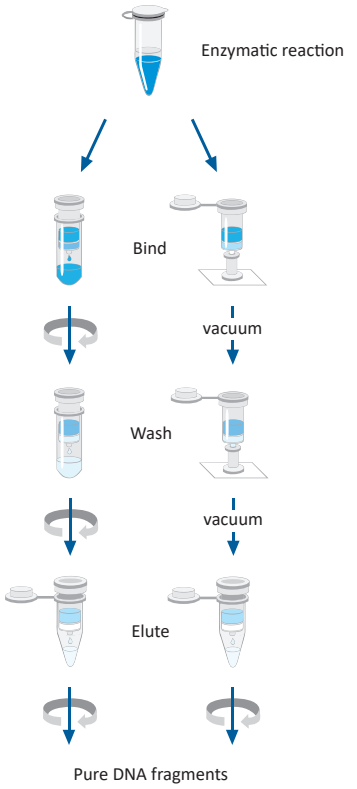
DNA Automated Sequencing Analysis



Automatic sequencing data of 1.5 kb PCR products purified by Expin™ CleanUp SV. Sequencing was performed on an ABI3730XL (96-capillary) DNA sequencer using an internal primers.

Procedures

in microcentrifuges | on vacuum manifolds



Component list

Column Type D (with collection tube)
Buffer NR
Buffer NW
Buffer EB
Protocol Handbook

Cat. No.	Products	Type	Size
113-150	Expin™ CleanUp SV	mini / spin / vacuum	50
113-102	Expin™ CleanUp SV	mini / spin / vacuum	200

Expin™ Combo GP

Combined kit of Expin™ Gel SV and PCR SV

Description

Expin™ Combo GP kit is the combined product of Expin™ Gel SV and Expin™ PCR SV. It contains not only Buffer GB required for Gel SV but also Buffer PB for PCR SV, so the procedure can be chosen as user's need. No organic extraction and alcohol precipitation are needed and multiple samples can be easily processed simultaneously. Purified DNA is ready for automated sequencing, cloning, *in vitro* transcription, microarray and other enzymatic reaction.

Features and Benefits

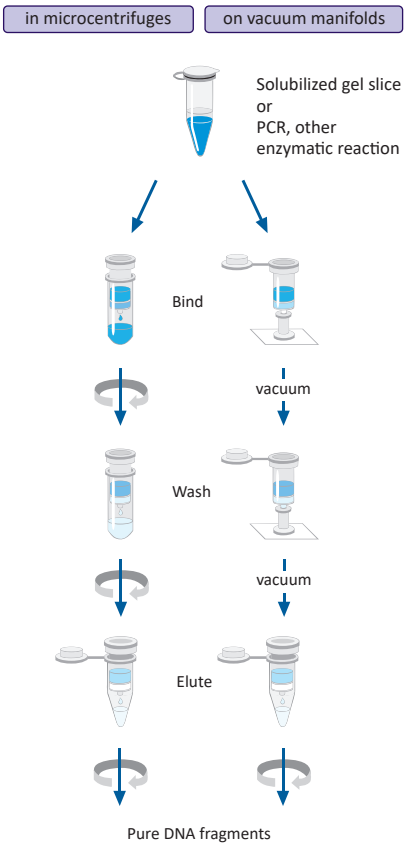
- Spin or vacuum column format
- DNA purification from agarose gel and enzymatic reactions
- Stable and consistent result
- High yield and purity
- No organic extraction or alcohol precipitation
- Ready for use in cloning, automated sequencing, *in vitro* transcription, labeling, microarray, hybridization and other enzymatic reactions

Recovery Rates (%)

DNA size (bp)	Gel SV	PCR SV	CleanUp SV
60	39	0	63
120	71	78	80
200	76	83	84
800	84	94	94
1800	82	91	93
4300	78	85	88
8700	73	76	79

Average recovery rates of Expin™ SV kit with various sizes of DNA. 3 μg of starting sample was purified and eluted with 50 μℓ of Buffer EB. Optional steps were not performed and SV columns were incubated for 1 minute after addition of Buffer EB.

Procedures



Component list

Column Type D (with collection tube)
Buffer GB
Buffer PB
Buffer NW
Buffer EB
Protocol Handbook

Cat. No.	Products	Type	Size
112-150	Expin™ Combo GP	mini / spin / vacuum	50
112-102	Expin™ Combo GP	mini / spin / vacuum	200

Selection Guide

For Genomic DNA Purification

Exgene™ / *GenEx*™ / DirEx™ Series

Exgene™ and *GenEx*™ series are designed for the purification of total DNA from a variety of sample sources. Exgene™ series provide fast and easy methods in convenient spin or vacuum column format and there are no need phenol extraction or alcohol precipitation. *GenEx*™ series provide convenient, scalable purification methods in the specially formulated buffer system.
Purified total DNA can be directly applicable in conventional PCR, real-time PCR, southern blotting, genotyping, RFLP and other downstream applications. DirEx™ series provide easy and simple preparation of PCR template DNA in a single-tube without laborious extraction process. Prepared DNA can be applied directly to PCR analysis.

	Exgene™											*GenEx*™				DirEx™
Sample Type	Exgene™ Tissue SV (Plus) *	Exgene™ Blood SV	Exgene™ Cell SV	Exgene™ Clinic SV	Exgene™ Genomic DNA micro	Exgene™ Plant SV	Exgene™ Rice DNA	Exgene™ Viral DNA / RNA	Exgene™ Soil DNA mini	Exgene™ Stool DNA mini	Exgene™ FFPE Tissue DNA	*GenEx*™ Blood / Cell / Tissue ** B	*GenEx*™ Blood / Cell / Tissue ** C	*GenEx*™ Plant *** (Plus) T	*GenEx*™ Plant *** (Plus)	DirEx™ / DirEx™ *Fast*
Animal tissue	○		○	○	○									○		○
Body fluid		○	○	○	○			○				△				△
Bone					○											
Buccal swab	△	○	○	○	○			△								○
Buffy coat		○	○	○	△			△				△				
Callus						○									○	
Cultured cells	○	○	○	○	△			○					○	○		○
DNA virus		○	○	○	○			○								
Dried blood spot			○	○	○											○
Fixed tissue	○		○	○	△						○			△		
Forensic sample					○											△
Fungi						○			△						○	
Gram(-) bacteria	○		○	○	△			△					○	○		○
Gram(+) bacteria	△		○	△	△								△	△		△
Hair		○	○	○	○											○
Lichens									○							
Insect / worm	○		△	△	△									○		△
Mammalian whole blood	○*	○	○	○	○							○				○
Nail					○											○
Nucleated blood	△	○	○	○	△							△				△
Paraffin block	○		○	○	△						○			○		
Plant cells						○									○	
Plant tissue						○									○	
Rice							○								△	
Rodent tails	○		○	○	○									○		
Saliva			○	○	○											
Soil									○							
Sperm			△	△	○			○								
Urine			○	○	○											
Yeast	△		○	△	△								△	△		△
Stool										○						

○ *Recommended* / △ *Recomended with additional preparation step*

* *Exgene™ Tissue Plus provides the additional methods for the purification of total DNA from mammalian whole blood.*

** *GenEx™ series provide convenient, scalable purification methods in the specially formulated buffer systems.*

*** *GenEx™ Plant Plus kit has an additional feature, EzSep™ Filter for cleared supernatant*

03. Genomic DNA Purification System

Exgene™ Tissue SV (Plus)

For the isolation of gDNA from tissues, cells and whole blood (Plus)

Description

Exgene™ Tissue SV kit provides a simple and rapid method for the isolation of total DNA from animal tissues and cultured cells. This kit can process 25 mg (mini) of wet tissue and yields up to 50 μg (mini) depending on the type of sample used. Specially formulated buffer system minimize RNA copurified with DNA without RNase A treatment. RNase A can be treated in this protocol. No organic extraction and alcohol precipitation are needed and multiple samples can be easily processed simultaneously. Exgene™ Tissue SV Plus offers additional material and method for DNA purification from whole blood.

Features and Benefits

- Spin or vacuum column format
- Accurate and consistent DNA extraction from animal tissues, cultured cell line and whole blood (Plus only)
- Simple and safe procedure
- High purity : A_{260} / A_{280} = 1.8 ~ 2.0
- No use of organic solvents
- Ready for use in PCR, southern blotting, AFLP, RFLP, RAPD and other enzymatic reactions

Exgene™ Tissue SV (Plus) mini

Format : Column Type G (mini), (with 2.0 ml collection tube)

Sample size : ~ 25 mg tissue

Preparation time : 25 ~ 220 min

Typical yield : 5 ~ 50 μg

Elution volume : 30 ~ 400 μℓ

Midi

Format : Column Type G (Midi), (with 15 ml collection tube)

Sample size : ~ 100 mg tissue

Preparation time : 40 ~ 250 min

Typical yield : 20 ~ 150 μg

Elution volume : 200 ~ 600 μℓ

MAXI

Format : Column type G (MAXI), (with 50 ml collection tubes)

Sample size : ~ 250 mg tissue

Preparation time : 40 ~ 250 min

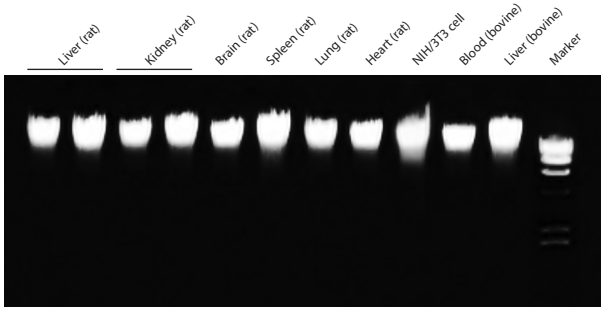
Typical yield : 80 ~ 400 μg

Elution volume : 400 ~ 2000 μℓ

* The time and results of the experiment differ depending on the type of sample used.

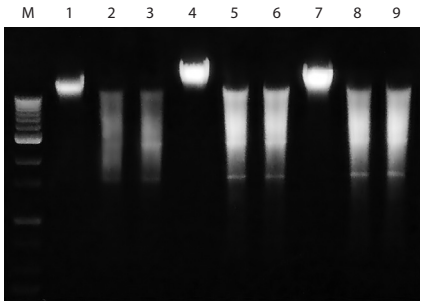
Cat. No.	Products	Type	Size
104(9)-101	Exgene™ Tissue SV (Plus)	mini / spin / vacuum	100
104(9)-152	Exgene™ Tissue SV (Plus)	mini / spin / vacuum	250
104(9)-226	Exgene™ Tissue SV (Plus)	Midi / spin / vacuum	26
104(9)-201	Exgene™ Tissue SV (Plus)	Midi / spin / vacuum	100
104(9)-310	Exgene™ Tissue SV (Plus)	MAXI / spin / vacuum	10
104(9)-326	Exgene™ Tissue SV (Plus)	MAXI / spin / vacuum	26

DNA Extraction from Various Samples



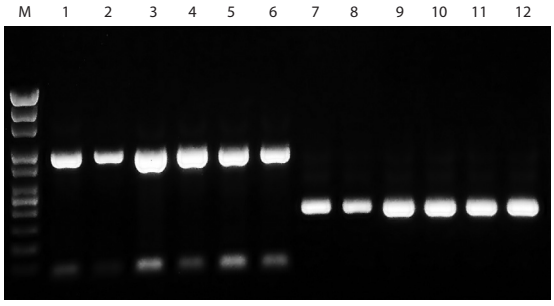
DNA purification using Exgene™ Tissue SV (Plus) kit. DNA from several kinds of animal tissues was prepared. Elution was performed with 100 μℓ of Buffer AE. 8 μℓ of eluates was resolved on 0.8% agarose gel.

Compatibility Test with Restriction Enzymes



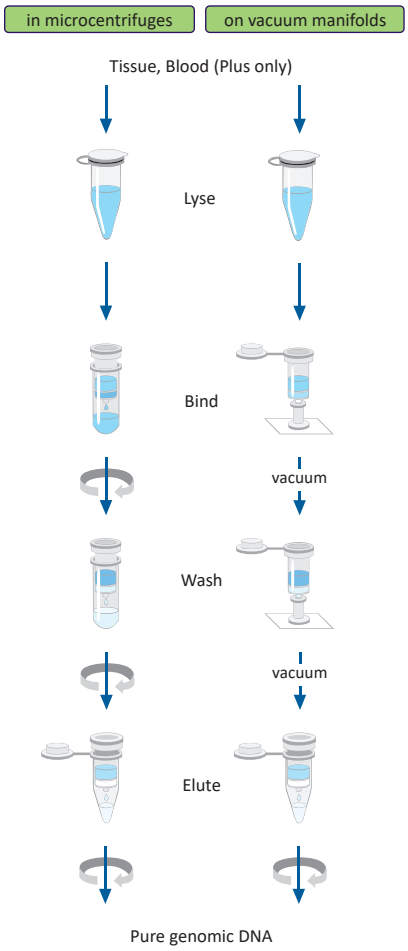
Genomic DNA purified from various rat samples using Exgene™ Tissue SV kit was partially digestied with EcoRI (Lane 2 ~ 3, 5 ~ 6, 8 ~ 9).
Lane 1, 4, 7 represent undigested DNA.
Lane M : 1 kb ladder

PCR Amplification



PCR reaction was performed with purified DNA using Exgene™ Tissue SV kit. Template was isolated from rat liver (Lane 1 ~ 2, 7 ~ 8), spleen (Lane 3 ~ 4, 9 ~ 10) and kidney (Lane 5 ~ 6, 11 ~ 12).
Lane M : 1 kb ladder

Procedures



Component list

Column Type G (with collection tube)
Collection tube
Buffer RL (Plus only)
Buffer TL
Buffer TB
Buffer BW
Buffer TW
Buffer AE
Proteinase K
PK Storage buffer
Protocol Handbook

* **GeneAll®** Midi / MAXI kits require the centrifuge which has swing bucket rotor and ability of 4,000 x g at least.

Exgene™ Blood SV

For the isolation of gDNA from blood and its derivatives

Description

Exgene™ Blood SV kit provides a simple and rapid method for the isolation of total DNA from fresh or frozen whole blood, buffy coat, serum, plasma, virus and cultured cells. Purification procedure is so simple and optimized to simultaneous processing of multiple samples. Exgene™ Blood SV yields pure DNA ready for direct PCR in just 20 minutes (mini) and 1 hour (Midi / MAXI). There is no need phenol extraction or alcohol precipitation.

Features and Benefits

- Spin or vacuum column format
- Accurate and consistent DNA extraction from whole blood, buffy coat, serum, plasma, cultured cells
- Fast, safe and simple procedure completed in 20 minutes (mini), 1 hour (Midi, MAXI)
- High purity : 1.8 ~ 2.0
- No use of organic solvents
- Ready for use in PCR, southern blotting and other enzymatic reactions

Exgene™ Blood SV mini

Format : Column Type G (mini), (with 2.0 ml collection tube)

Sample size : ~ 200 μℓ

Preparation time : 20 ~ 30 min

Typical yield : 4 ~ 20 μg

Elution volume : 30 ~ 400 μℓ

Midi

Format : Column type G (Midi), (with 15 ml collection tube)

Sample size : 1 ~ 2 ml

Preparation time : 40 ~ 55 min

Typical yield : 20 ~ 60 μg

Elution volume : 200 ~ 600 μℓ

MAXI

Format : Column type G (MAXI), (with 50 ml collection tube)

Sample size : 3 ~ 10 ml

Preparation time : 40 ~ 55 min

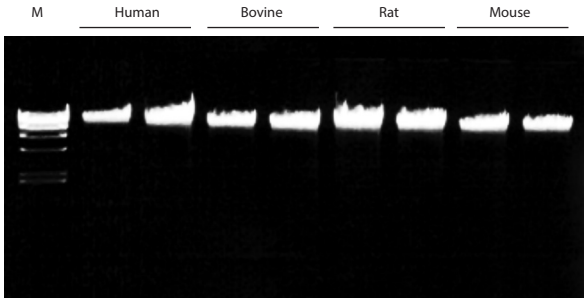
Typical yield : 80 ~ 400 μg

Elution volume : 400 ~ 2000 μℓ

* The time and results of the experiment differ depending on the type of sample used.

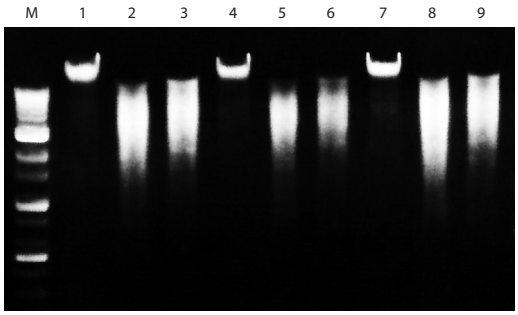
Cat. No.	Products	Type	Size
105-101	Exgene™ Blood SV	mini / spin / vacuum	100
105-152	Exgene™ Blood SV	mini / spin / vacuum	250
105-226	Exgene™ Blood SV	Midi / spin / vacuum	26
105-201	Exgene™ Blood SV	Midi / spin / vacuum	100
105-310	Exgene™ Blood SV	MAXI / spin / vacuum	10
105-326	Exgene™ Blood SV	MAXI / spin / vacuum	26

DNA Extraction from Various Samples



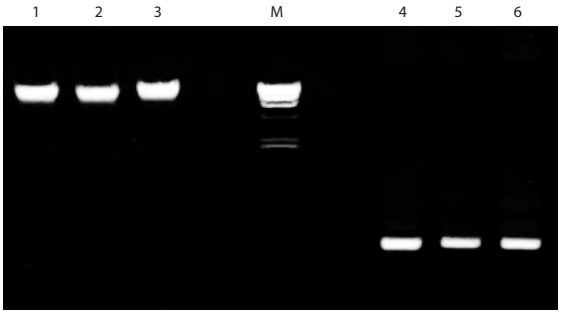
Total DNA was isolated from 200 μℓ of whole blood of various species using Exgene™ Blood SV mini kit. Each lane represents 8 μℓ of 100 μℓ eluates.
Lane M : Lambda-HindIII

Compatibility Test with Restriction Enzymes



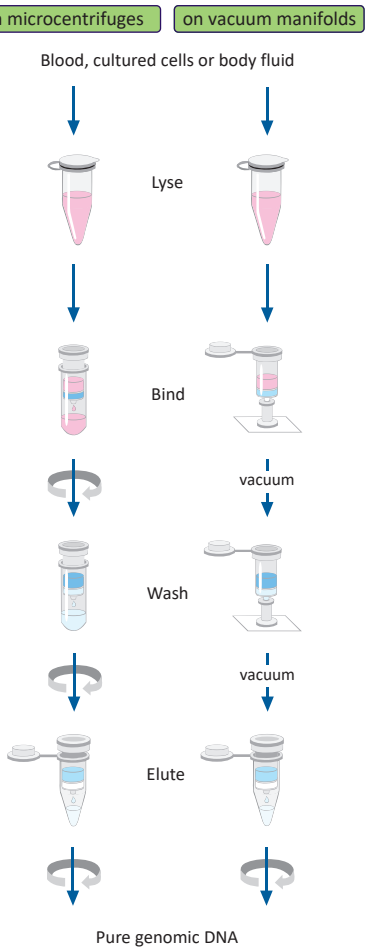
Genomic DNA purified from various rat blood samples using Exgene™ Blood SV mini kit was partially digestied with EcoRI (Lane 2 ~ 3, 5 ~ 6, 8 ~ 9). Lane 1, 4, 7 represent undigested DNA.
Lane M : 1 kb ladder

PCR Amplification



PCR reaction was performed with purified DNA using Exgene™ Blood SV kit as template. Each lane 1, 2 and 3 corresponds to the template of each PCR product (Lane 4, 5, 6). Template DNA was isolated from whole blood of rat (SD) and the exon region of GAPDH gene was amplified with Taq polymerase.

Procedures



Component list

Column Type G (with collection tube)
Collection tube
Buffer BL
Buffer BW
Buffer TW
Buffer AE
Proteinase K
PK Storage buffer
Protocol Handbook

* **GeneAll**® Midi / MAXI kits require the centrifuge which has swing bucket rotor and ability of 4,000 x g at least.

Exgene™ Clinic SV

For the isolation of gDNA from clinical tissues including whole blood

Description

Exgene™ Clinic SV kit provides an easy and fast method for the isolation of total DNA such as genomic, mitochondrial, bacterial, parasite or viral DNA from various clinical sample including tissues, whole blood and body fluids. The purified DNA is suitable for PCR, blotting, RFLP, RAPD, AFLP and etc.

Features and Benefits

- Spin and vacuum format
- Easy and fast purification of high-quality DNA
- No organic extraction or alcohol precipitation
- Consistent and high yields
- High purity : 1.8 ~ 2.0
- Ready for use in PCR, Southern blotting, genotyping and etc.

Exgene™ Clinic SV mini

Format : Column Type G (mini), (with 2.0 ml collection tube)

Sample size : ~ 20 mg

Preparation time : 25 ~ 220 min

Typical yield : 5 ~ 50 μg

Elution volume : 30 ~ 400 μℓ

Midi

Format : Column Type G (Midi), (with 15 ml collection tube)

Sample size : ~ 100 mg

Preparation time : 40 ~ 250 min

Typical yield : 20 ~ 80 μg

Elution volume : 200 ~ 600 μℓ

MAXI

Format : Column Type G (MAXI), (with 50 ml collection tube)

Sample size : ~ 250 mg

Preparation time : 40 ~ 250 min

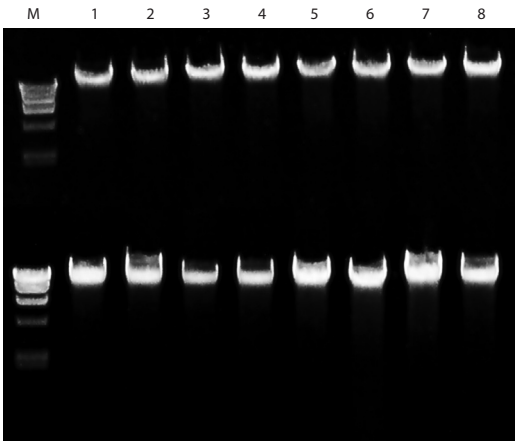
Typical yield : 80 ~ 400 μg

Elution volume : 400 ~ 2000 μℓ

* The time and results of the experiment differ depending on the type of sample used.

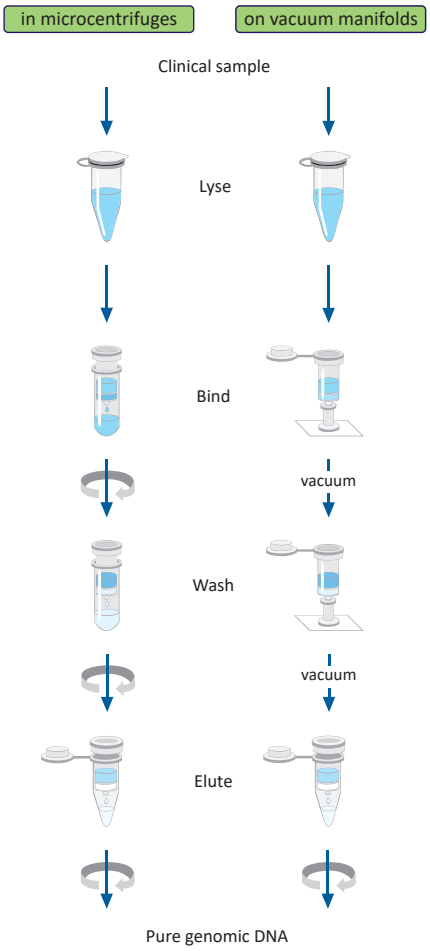
Cat. No.	Products	Type	Size
108-101	Exgene™ Clinic SV	mini / spin / vacuum	100
108-152	Exgene™ Clinic SV	mini / spin / vacuum	250
108-226	Exgene™ Clinic SV	Midi / spin / vacuum	26
108-201	Exgene™ Clinic SV	Midi / spin / vacuum	100
108-310	Exgene™ Clinic SV	MAXI / spin / vacuum	10
108-326	Exgene™ Clinic SV	MAXI / spin / vacuum	26

Consistent Result from Various Samples



Extracted gDNA using Exgene™ Clinic SV mini is resolved on 0.8% agarose gel.
M : Lambda-HindIII

Procedures



Component list

Column Type G (with collection tube)
Collection tube
Buffer CL
Buffer BL
Buffer BW
Buffer TW
Buffer AE
Proteinase K
PK Storage buffer
Protocol Handbook

* **GeneAll®** Midi / MAXI kits require the centrifuge which has swing bucket rotor and ability of 4,000 x g at least.

Exgene™ Cell SV

For the isolation of gDNA from cultured cell, yeast, gram positive/negative bacteria and etc.

Description

Exgene™ Cell SV kit provides a rapid and simple method for the purification of total DNA from a wide range of organism including bacterial cells, yeast, cultured cells, whole blood and blood derivatives. Up to 2 x 10^9 bacterial cells, 5 x 10^6 cultured cells or 3 ml of yeast cultures may yield 5 ~ 25 μg of DNA typically. The pure DNA can be acquired in just 30 minutes and this can be directly used in various applications such as PCR, Southern blotting and other enzymatic reactions.

Features and Benefits

- Spin or vacuum column format
- Accurate and consistent DNA extraction from gram positive or negative bacteria, cultured cell, yeast and various biological samples
- High purity : 1.8 ~ 2.0
- Simple and safe procedure
- No use of organic solvents
- Ready for use in PCR, Southern blotting, AFLP, RFLP, RAPD and other enzymatic reactions

Exgene™ Cell SV mini

Format : Column Type G (mini), (with 2.0 ml collection tube)

Sample size : ~ 2 x 10^9 bacterial cells ~ 5 x 10^7 yeast cells

Preparation time : 30 ~ 120 min

Typical yield : 5 ~ 25 μg

Elution volume : 30 ~ 400 μℓ

MAXI

Format : Column Type G (MAXI), (with 50 ml collection tube)

Sample size : ~ 5 x 10^{10} bacterial cells ~ 5 x 10^8 yeast cells

Preparation time : 60 ~ 240 min

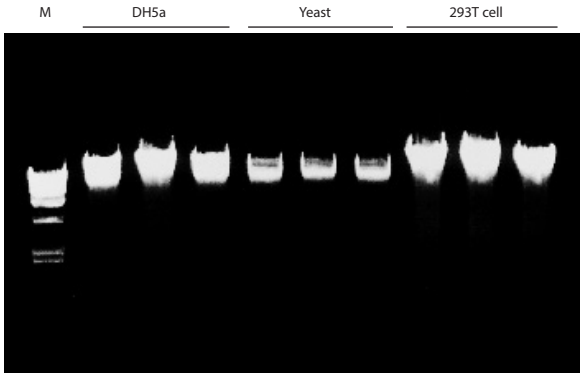
Typical yield : 80 ~ 400 μg

Elution volume : 400 ~ 2000 μℓ

* The time and results of the experiment differ depending on the type of sample used.

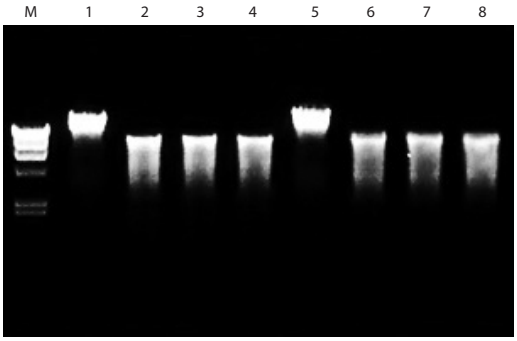
Cat. No.	Products	Type	Size
106-101	Exgene™ Cell SV	mini / spin / vacuum	100
106-152	Exgene™ Cell SV	mini / spin / vacuum	250
106-310	Exgene™ Cell SV	MAXI / spin / vacuum	10
106-326	Exgene™ Cell SV	MAXI / spin / vacuum	26

Consistent Result from Various Samples



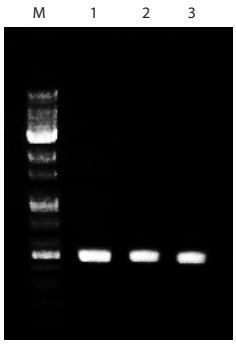
Genomic DNA prepared from a several species of cells using Exgene™ Cell SV kit. 5 ㎕ out of 100 ㎕ eluate was resolved on 0.8% agarose gel.
Lane M : Lambda-HindIII

Compatibility Test with Restriction Enzymes



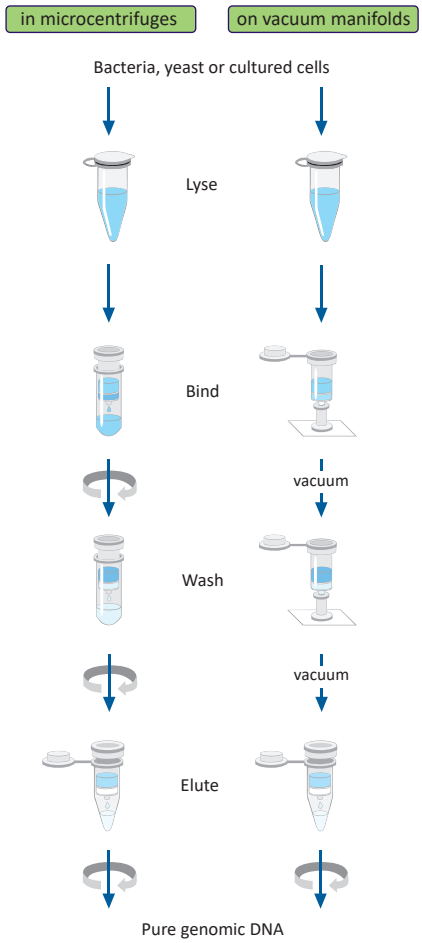
Genomic DNA purified from *E. coli* DH5α and JB6 samples using Exgene™ Cell SV kit was partially digested with BamHI (Lane 2 ~ 4, 6 ~ 8). Lane 1, 5 represent undigested DNA.
Lane M : Lambda-HindIII

PCR Amplification



PCR reaction was performed with purified DNA using Exgene™ Cell SV kit. Template DNA was isolated from *E. coli* DH5α (Lane 1, 2, 3).
PCR reaction was performed with genomic DNA purified from DH5α using Exgene™ Cell SV kit.
Lane M : Lambda-HindIII

Procedures



Component list

Column Type G (with collection tube)
Collection tube
Buffer GP
Buffer YL
Buffer CL
Buffer BL
Buffer BW
Buffer TW
Buffer AE
Proteinase K
PK Storage buffer
Protocol Handbook

* **GeneAll®** MAXI Kits require the centrifuge which has swing bucket rotor and ability of 4,000 x g at least.

Exgene™ Plant SV

For the isolation of gDNA from plant cells and tissues

Description

Exgene™ Plant SV kit provides a simple and easy method for the small, medium and large scale purification of total DNA from various plant tissues. With EzSep™ Filter and Column Type G, the procedure can be done in just 40 minutes (mini), yielding a pure genomic DNA suitable for various downstream appilcations without further manipulation. Up to 100 mg, 400 mg, and 1 g of plant tissue can be processed with Exgene™ Plant SV mini, Midi and MAXI, respectively. Exgene™ Plant SV procedure eliminates the need of organic solvent extraction and alcohol precipitation, allowing safe and fast preparation of many samples simultaneously. Purified total DNA can be directly applicable in conventional PCR, real-time PCR, Southern blotting, SNP genotyping, RFLP, AFLP and RAPD.

Features and Benefits

- Spin or vacuum column format
- Stable and consistent DNA extraction from plant cells, tissues and fungi
- Perfect removal of second metabolites such as polyphenols and polysaccharides
- Simple procedure by the use of EzSep™ Filter
- No use of organic solvents
- Ready for use in PCR, Southern blotting, AFLP, RFLP, RAPD and other enzymatic reactions

Exgene™ Plant SV mini

Format : Column Type G (mini), (with 2.0 ml collection tube)

Sample size : ~ 100 mg wet (25 mg dry)

Preparation time : < 40 min

Typical yield : 4 ~ 40 μg

Elution volume : 30 ~ 400 μℓ

Midi

Format : Column Type G (Midi), (with 15 ml collection tube)

Sample size : ~ 400 mg wet (100 mg dry)

Preparation time : < 1 hour

Typical yield : 10 ~ 150 μg

Elution volume : 200 ~ 600 μℓ

MAXI

Format : Column Type G (MAXI), (with 50 ml collection tube)

Sample size : ~ 1 g wet (250 mg dry)

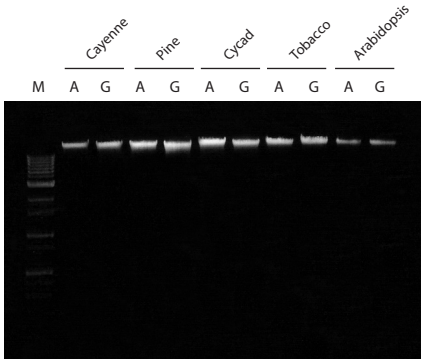
Preparation time : < 1 hour

Typical yield : 40 ~ 300 μg

Elution volume : 400 ~ 2000 μℓ

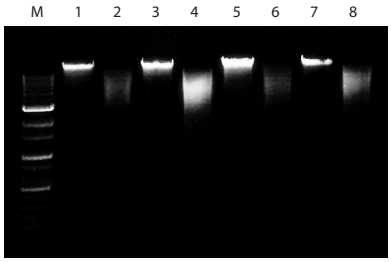
Cat. No.	Products	Type	Size
117-101	Exgene™ Plant SV	mini / spin / vacuum	100
117-152	Exgene™ Plant SV	mini / spin / vacuum	250
117-226	Exgene™ Plant SV	Midi / spin / vacuum	26
117-201	Exgene™ Plant SV	Midi / spin / vacuum	100
117-310	Exgene™ Plant SV	MAXI / spin / vacuum	10
117-326	Exgene™ Plant SV	MAXI / spin / vacuum	26

Comparison of DNA Extraction



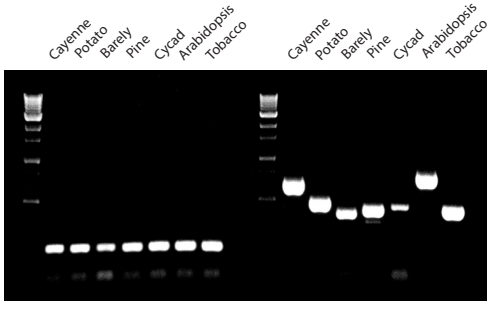
Genomic DNA was extracted from each 100 mg of various samples and analyzed on 0.8% agarose gel. To compare with supplier A, same kind and amount of each plant samples were subjected to extraction.
Lane A : supplier A, Lane G : Exgene™ Plant.
Lane M : 1 kb ladder

Compatibility Test with Restriction Enzymes



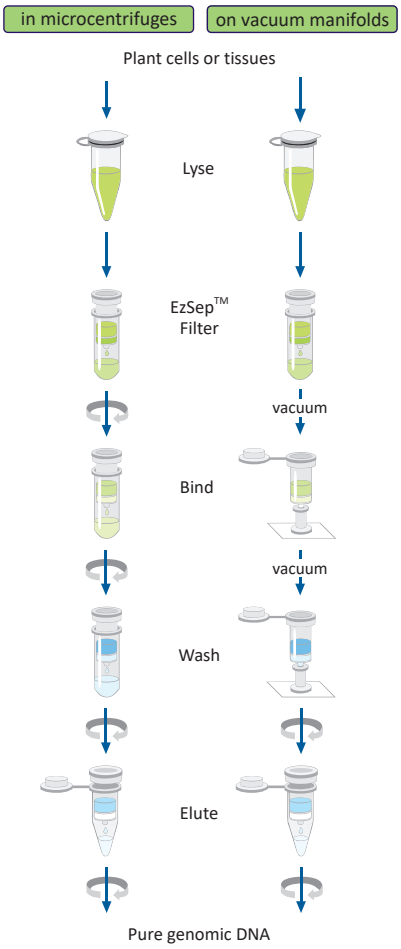
Genomic DNA purified from various plant samples by Exgene™ Plant SV kit was subjected to partial digestion with HindIII (Lane 2, 4, 6, 8). Lane 1, 3, 5, 7 represent undigested DNA.
Lane M : 1 kb ladder

PCR Amplification



PCR reaction was performed with purified DNA using Exgene™ Plant SV kit. Two primer sets were used : trnL region (left lanes) and large subunit rRNA gene (right lanes).

Procedures



Component list

Column Type G (with collection tube)
EzSep™ Filter (with collection tube)
Buffer PL
Buffer PD
Buffer BD
Buffer CW
Buffer AE
RNaseA (100 mg / ml)
Protocol Handbook

* **GeneAll®** Midi / MAXI Kits require the centrifuge which has swing bucket rotor and ability of 4,000 x g at least.

Exgene™ Soil DNA mini

For the isolation of gDNA from soil samples

Description

Exgene™ Soil DNA mini Kit provides a convenient method for the isolation of total DNA from soil samples. This kit utilizes the powerful beads, the optimized buffer system and the advanced silica binding technology to purify nucleic acid suitable for many applications. These complex systems of this kit can deal with a number of different types of samples in the soil including plant tissues, bacteria, fungi spores and others. Also, it removes a humic acid contents and other PCR inhibitors from various soil samples efficiently. The humic acid contents, which are a sort of brownish colour, are a critical factor for soil treating experiments. If remained in eluate, this can have a negative effect on the DNA downstream applications. Exgene™ Soil DNA mini provides a tube including powerful beads for strong pulverization. Soil samples are placed in this tube with lysis buffer, Buffer SL, and crushed by bead-beater or vortex. After centrifugation, supernatant is mixed with precipitation buffer, Buffer RH and Buffer PD, to precipitate humic acid and protein. Then, the separated DNA part, supernatant, blend into the binding buffer, Buffer TB, and DNA is bound on the silica membrane through centrifugation. Following washing step with Buffer NW, the bound DNA is eluted by Buffer EB. Purified DNA can be directly applicable in conventional PCR, restriction analysis, electrophoresis and any other downstream applications.

Features and Benefits

- Glassfiber membrane technology
- Easy and fast purification of high-quality DNA
- Efficient lysis step using Powerbead™ Tube
- Perfect removal of humic acid
- Stable and consistent yield
- No organic extraction or alcohol precipitation
- High purity : ready for the conventional and real-time PCR

Exgene™ Soil DNA mini

Format : Column Type G (mini),
(with 2.0 ml collection tube)

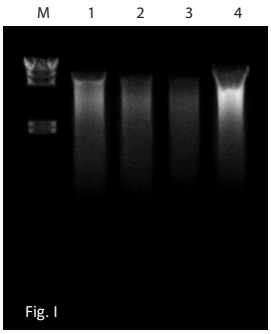
Sample size : ~ 500 mg

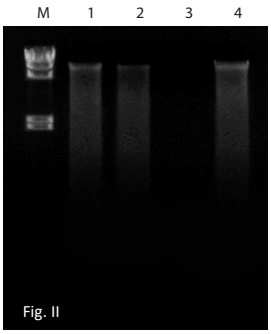
Preparation time : ~ 25 min

Elution volume : 30 ~ 200 $\mu\ell$

Cat. No.	Products	Type	Size
114-150	Exgene™ Soil DNA mini	mini / spin	50

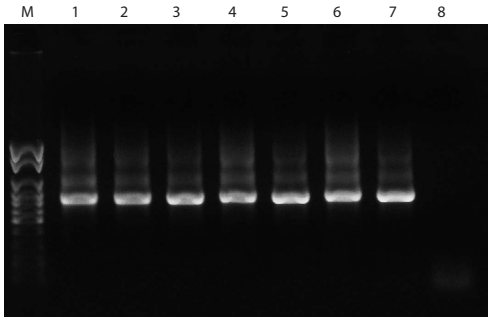
Comparative Genomic DNA Purification Result





gDNA isolated from various soil samples with Exgene™ Soil DNA mini (Fig. I) vs supplier A (Fig. II) (used vortex homogenization method)
Lane M : Lambda-HindIII
Lane 1 : Soil under cherry blossom
Lane 2 : Soil of onion patch
Lane 3 : Soil of cabbage patch
Lane 4 : Mud

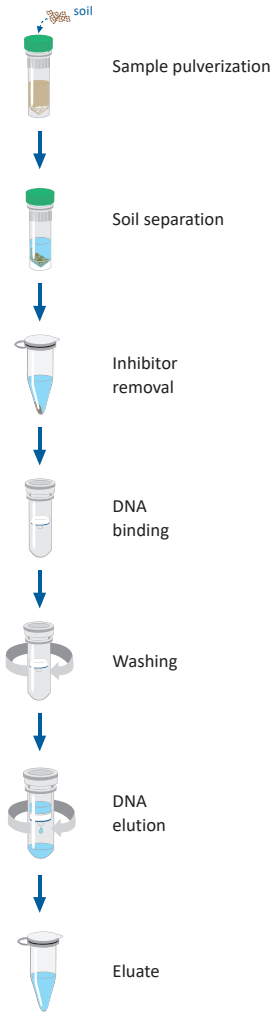
PCR Amplification



gDNA was purified from various soil samples using Exgene™ Soil DNA mini.
And then, the 16s rRNA was amplified by PCR and confirmed by electrophoresis.

Lane M : 100 bp ladder
Lane 1 : Pot soil
Lane 2 : Soil under cherry blossom A
Lane 3 : Soil of cabbage patch A
Lane 4 : Soil under cherry blossom B
Lane 5 : Soil of cabbage patch B
Lane 6 : Soil under cherry blossom C
Lane 7 : Soil of cabbage patch C
Lane 8 : Negative

Procedures



Component list
Column Type G (with collection tube)
1.5 ml microcentrifuge tube
2.0 ml microcentrifuge tube
Buffer SL
Buffer RH
Buffer PD
Buffer TB
Buffer NW
Buffer EB
Powerbead™ Tube
Protocol Handbook

Exgene™ Genomic DNA micro

For the isolation of total DNA from micro-scale biological samples

Description

Exgene™ Genomic DNA micro kit provides fast and easy methods for the micro scale purification of total (genomic and mitochondrial) DNA from various biological samples. Purified DNA can be used directly for PCR, quantitative PCR, genotyping such as STR analysis and other downstream applications. Exgene™ Genomic DNA micro utilizes the advanced silica-binding technology to purify total DNA sufficiently pure for many applications. Various samples are lysed in optimized buffer containing detergents and lytic enzyme. Under high salt condition, DNA in the lysate bind to silica membrane and impurities pass through membrane into a collection tube. The membranes are washed with a series of alcohol-containing buffer to remove any traces of proteins, cellular debris and salts. Finally pure DNA is released into a clean collection tube with deionized water or low ionic strength buffer.

Features and Benefits

- Spin column format
- Micro scale DNA purification using Column Type S (micro)
- Simple and safe procedure
- Stable and consistent result
- No use of organic solvents
- High yield and purity
- Various protocol for forensic sample : stain, chewing gum, cigarette butts, tooth brush, and etc.

Exgene™ Genomic DNA micro

Format : Column Type S (micro),
(with 2.0 ml collection tube)

Sample size : ~ 100 μℓ whole blood

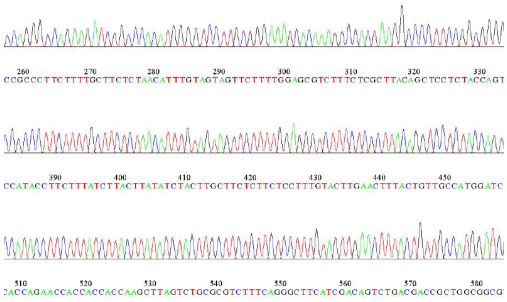
Preparation time : > 20 min

Elution volume : 20 ~ 50 μℓ

* The time and results of the experiment differ depending on the type of sample used.

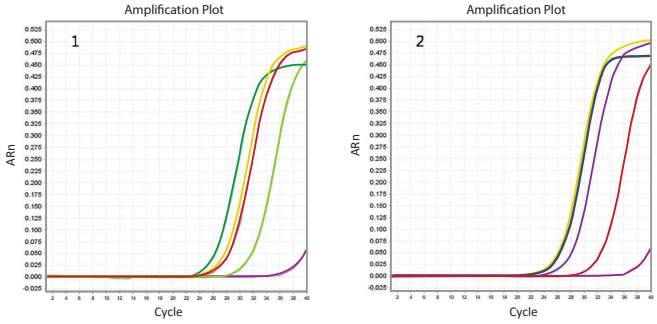
Cat. No.	Products	Type	Size
118-050	Exgene™ Genomic DNA micro	mini / spin	50

Stable and Reproducible Results

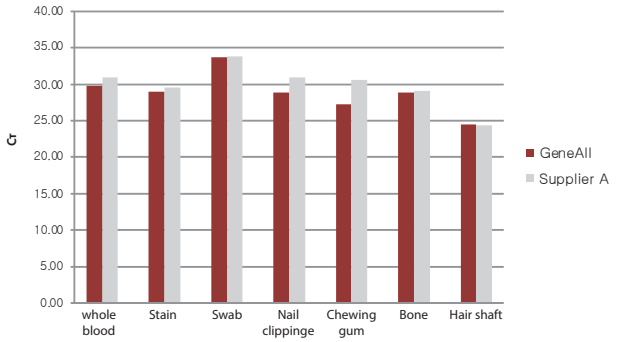


Automatic sequencing data of 1 kb PCR products of extracted genomic DNA by Exgene™ Genomic DNA micro kit. Sequencing was performed on an ABI3730XL (96-capillary) DNA sequencer using an internal primers.

Real-Time PCR Amplification

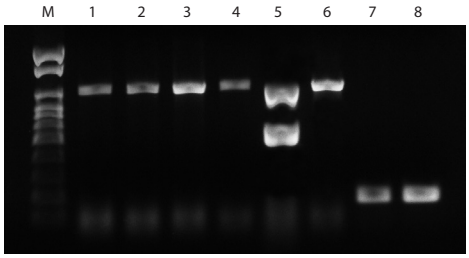


Real-time PCR was performed with purified DNA by Exgene™ Genomic DNA micro kit. The DNA was extracted from whole blood, stains, swab and hair root (Panel 1), nail clippings, chewing gum, tooth brush and urine (Panel 2). Real-time PCR was carried out with human GAPDH primer sets and detected by SYBR® Green reagent.



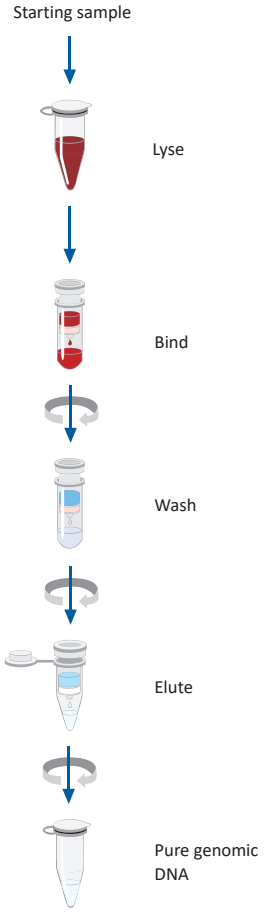
DNA extraction from various biological samples using Exgene™ Genomic DNA micro kit or a kit from Supplier A. Real-time PCR was carried out human GAPDH primer sets or mitochondria hypervariable region I primer sets and detected by SYBR® Green reagent.

PCR Amplification



PCR reaction was performed with purified DNA using Exgene™ Genomic DNA micro kit. Template was isolated from whole blood (Lane 1), dried blood spot (Lane 2), hair root (Lane 3), chewing gum (Lane 4), animal tissue (Lane 5), urine (Lane 6), bone (Lane 7) and hair shaft (Lane 8). Lane M : 1 kb ladder

Procedures



Component list
Column Type S (with collection tube)
Collection tube
Buffer CL
Buffer BL
Buffer BW
Buffer TW
Buffer AE
Carrier RNA
Proteinase K
PK Storage buffer
Protocol Handbook

Exgene™ Viral DNA / RNA

For viral DNA / RNA isolation from various samples

Description

Exgene™ Viral DNA / RNA kit provides fast and easy methods for the purification of total nucleic acids from viral samples such as cell-free fluid, cell-culture supernatant, plasma, serum, swab, urine, and virus-infected samples. Purified nucleic acids can be used directly for PCR, qPCR, RT-PCR, or any downstream application without further manipulation.

Exgene™ Viral DNA / RNA kit utilizes the advanced silica-binding technology to purify total nucleic acids sufficiently pure for many applications. Viral samples are lysed in optimized buffer containing detergent and lytic enzyme. Under optimized binding condition, nucleic acids in the lysate bind to silica membrane and impurities pass through membrane into a collection tube. The membranes are washed with a series of alcohol-containing buffer to remove any traces of proteins, cellular debris and salts. Finally pure nucleic acids are released into a clean collection tube with deionized water or low ionic strength buffer. The eluate should be treated with care because nucleic acids are very sensitive to contaminants, such as nucleases, often found on general labware and dust. To ensure nucleic acids stability, it is recommended to store at 4°C for immediate analysis or to freeze at -70°C for long-term storage.

Features and Benefits

- Spin column format
- No phenol / chloroform extraction
- No ethanol precipitation
- Apply to trace of sample : Using carrier RNA and micro column
- Efficient DNA and RNA virus lysis : Using proteinase K
- Optimized for liquid sample : Blood serum, plasma, liquid culture cell, and etc.
- Ready for use in PCR, RT-PCR, real-time PCR and other analytical procedures

Exgene™ Viral DNA / RNA

Format : Column Type S (micro),
(with 2.0 ml collection tube)

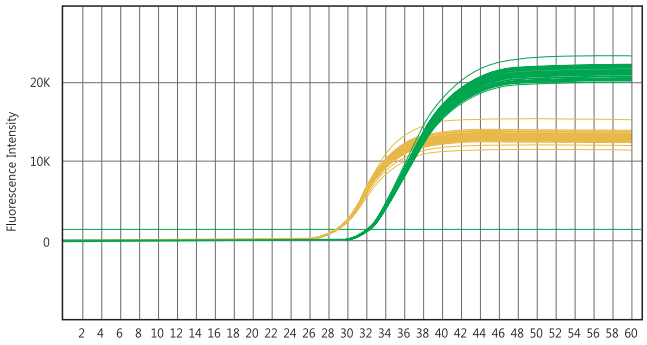
Sample size : ~ 200 μℓ

Preparation time : ~ 20 min

Elution volume : 20 ~ 50 μℓ

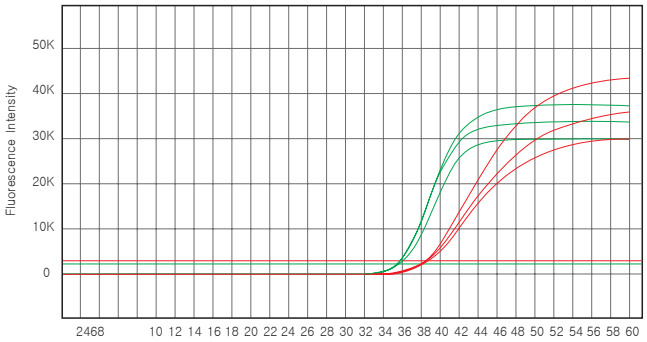
Cat. No.	Products	Type	Size
128-150	Exgene™ Viral DNA / RNA	mini / spin	50

Stable and Reproducible Results

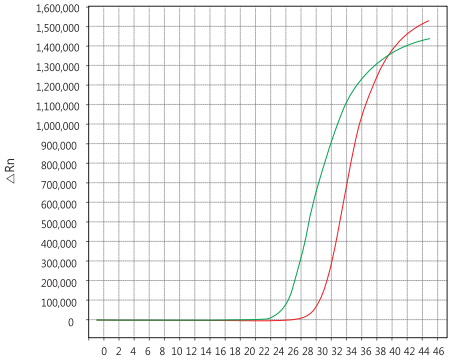


Exgene™ Viral DNA / RNA kit consistency test:
HIV positive was diluted to 1000 IU / ml with human serum.
Extraction tests of HIV samples of 24 repeats were performed with Exgene™ Viral DNA / RNA kit and the consistent result was confirmed by real-time PCR. Green is HIV signal and yellow is IC (internal control) signal.

Real-Time PCR Amplification

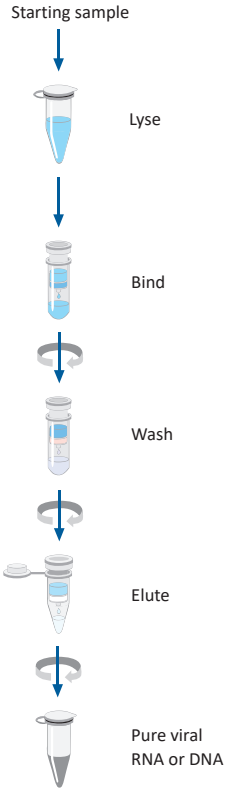


Results from different clinical human serum:
The extracted HIV (50 IU / ml, orange) and HBV (50 IU / ml, green) nucleic acids using Exgene™ Viral DNA / RNA kit were amplified and detected by real-time PCR. Three repeat tests were performed for each sample.



Real-time PCR analysis was conducted to amplify isolated DNA from HBV serum by Exgene™ Viral DNA / RNA (Green) and Supplier A (Orange).

Procedures



Component list

Column Type S (with collection tube)
1.5 ml microcentrifuge tube
Buffer BL
Buffer RB1
Buffer BW
Buffer TW
Nuclease-free water
Carrier RNA
Proteinase K
PK Storage buffer
Protocol Handbook

Exgene™ Stool DNA mini

For the isolation of gDNA from various stool samples

Description

Exgene™ Stool DNA mini kit provides a convenient method for the isolation of total DNA from stool samples. This kit utilizes a double binding procedure using the optimized buffer system and the advanced silica binding technology to purify nucleic acid suitable for many applications. Through this method, the contained impurities in the starting stool samples are removed so that high quality DNA can be purified from host and microbial cells. The stool samples can be applied up to 200 mg per prep and this procedure can be completed in 25 minutes.

This procedure is started with homogenization and lysis steps. The lysate is applied to EzPass™ Filter and then the stool DNA is eluted by centrifugation, the first binding step. After the first elution, the eluate is mixed with DNA binding buffer and the stool DNA is bound on the silica membrane. Following washing step, the bound DNA is eluted by elution buffer, the second elution. Purified DNA can be directly applicable in conventional PCR, restriction analysis, electrophoresis, and any other downstream applications.

Features and Benefits

- Spin column format
- Stable and consistent DNA extraction from stool samples
- Purification of high-quality DNA by the use of EzPass™ Filter
- Stable and consistent yield
- No organic extraction or alcohol precipitation
- Ready for use in PCR, restriction analysis, electrophoresis, and any other downstream applications

Exgene™ Stool DNA mini

Format : Column Type G (mini),
(with 2.0 ml collection tube)

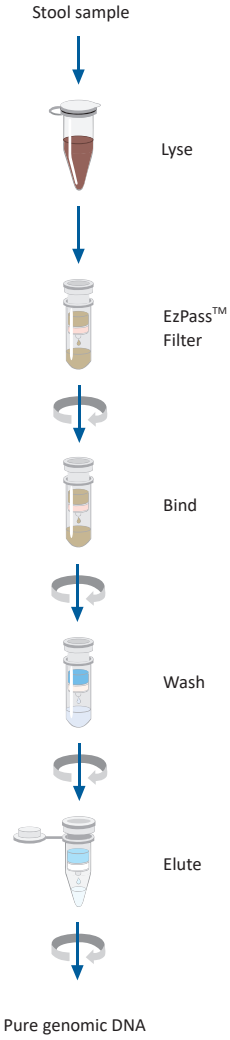
Sample size : ~ 200 mg

Preparation time : ~ 25 min

Elution volume : 30 ~ 200 μℓ

Cat. No.	Products	Type	Size
115-150	Exgene™ Stool DNA mini	mini / spin	50

Procedures



Component list
Column Type G (with collection tube)
EzPass™ Filter (with collection tube)
1.5 ml microcentrifuge tube
2.0 ml microcentrifuge tube
Buffer PBS
Buffer FL
Buffer EB
Buffer PB
Buffer NW
Protocol Handbook

Exgene™ FFPE Tissue DNA

For the isolation of total DNA from Formalin Fixed and Paraffin Embedded (FFPE) specimen

Description

Exgene™ FFPE Tissue DNA kit provides a convenient and easy method for the isolation of total DNA from Formalin Fixed and Paraffin Embedded (FFPE) specimen by non-organic solvent. FFPE is one of the most commonly used methods of clinical tissue preservation; the clinical tissue is fixed by formalin and subsequently embedded in paraffin to keep its original form.

The FFPE tissue is useful in disease research such as microscopic observation and immunohistochemical analysis. And the extracted-nucleic acid from FFPE specimen can be used for molecular diagnosis of various diseases. However, during the fixative process, the nucleic acids in FFPE are damaged significantly by various degrees of crosslinking between DNA and protein, and the damage get worse during its long-term preservation. For such a reason, the DNA isolated from the preserved FFPE specimen generally has low qualities in its yield, purity, integrity and PCR-processivity. But despite these problems, the purified nucleic acids from FFPE specimen are widely used for the PCR targeted to relatively short DNA fragments.

To obtain DNA from FFPE tissue by Exgene™ FFPE Tissue DNA kit, FFPE specimen is deparaffinized in Buffer DP which rapidly separate tissue from paraffin sections, and then the sample is lysed in the optimized buffer containing detergents and lytic enzymes. Under high salt condition, DNA in the lysate binds to silica membrane and impurities pass through membrane in to a collection tube. The membrane is washed with a series of alcohol-containing buffer to remove any traces of proteins, cellular debris and salts. Finally pure DNA is released into a clean collection tube with deionized water or low ionic strength buffer.

Purified DNA can be used directly for PCR (≤ 500 bp), real-time PCR, and other downstream applications.

Features and Benefits

- Easy, convenient and fast de-paraffinization with a single signature reagent in under 5 minutes
- Safer, odor-free environment with non-xylene based Buffer DP
- Guaranteed PCR product length up to 500 base pair
- RNase A included for pure DNA

Exgene™ FFPE Tissue DNA

Format : Column Type G (mini),
(with 2.0 ml collection tube)

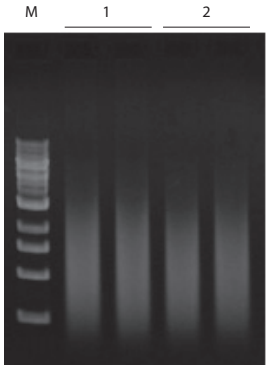
Sample size : ~ 8 sections of 10 μm in thickness

Preparation time : > 150 min

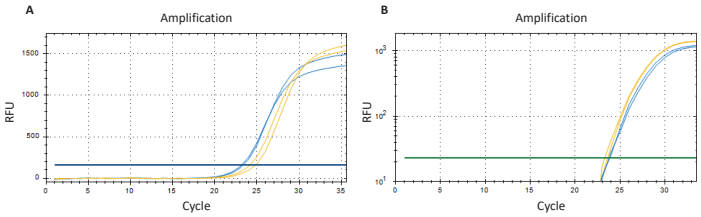
Elution volume : 30 ~ 50 μℓ

Cat. No.	Products	Type	Size
138-150	Exgene™ FFPE Tissue DNA	mini / spin	50
138-152	Exgene™ FFPE Tissue DNA	mini / spin	250

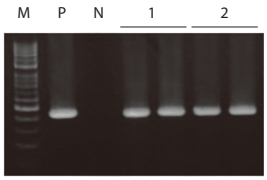
Comparison of Experimental Results



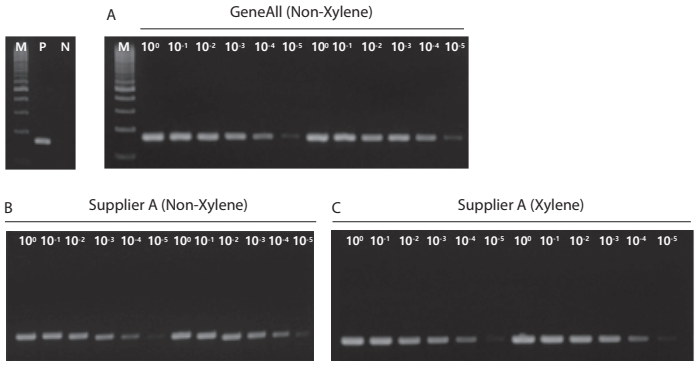
Total DNA was purified from human liver FFPE (5 µm, 1 section) using Exgene™ FFPE Tissue DNA and Supplier A. The purified total DNA was loaded on a 1% agarose gel.
Lane M : 1 kb ladder
Lane 1 : Total DNA from Exgene™ FFPE Tissue DNA
Lane 2 : Total DNA from Supplier A



Real-time PCR was performed with purified DNA using Exgene™ FFPE Tissue DNA (Blue) and Supplier A (Yellow). The DNA was purified from human stomach FFPE (Panel A) and human colorectal cancer FFPE (Panel B). Real-time PCR was carried out with human GAPDH primer sets and detected by AmpMaster™ qPCR Master mix.

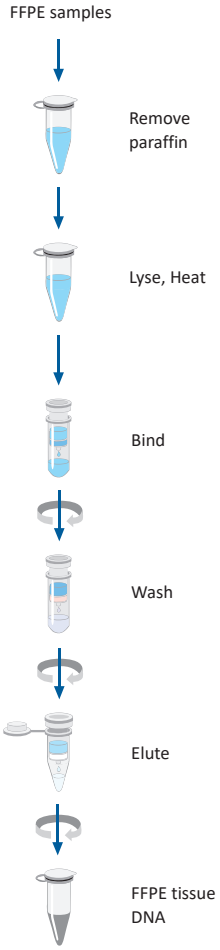


Total DNA was purified from human stomach FFPE infected by helicobacter pylori samples using Exgene™ FFPE Tissue DNA and supplier A. The DNA of helicobacter pylori was amplified by PCR and confirmed by electrophoresis.
Lane M : 100 bp ladder
Lane P : Positive control-Helicobacter pylori DNA as template
Lane N : Negative control-no template
Lane 1 : PCR of DNA from Exgene™ FFPE Tissue DNA
Lane 2 : PCR of DNA from supplier A



Comparison evaluation between Exgene™ FFPE Tissue DNA and supplier A were performed through PCR with GAPDH primers.
DNAs were purified from human cervix FFPE sample using both of Exgene™ FFPE Tissue DNA (Panel A) and Supplier A without (Panel B) and with xylene solution (Panel C) respectively.
Lane M : 100 bp ladder
Lane P : Positive control-Jurkat gDNA as template
Lane N : Negative control-no template

Procedures



Component list

Column Type G (with collection tube)
Collection tube
Buffer DP
Buffer FPL
Buffer FPB
Buffer BW
Buffer TW
Buffer AE
Proteinase K
PK Storage buffer
RNase A (100 mg / ml)
Protocol Handbook

Exgene™ Rice SV mini

For the isolation of gDNA from single rice grain

Description

Exgene™ Rice SV mini kit provides an easy and convenient procedure of DNA extraction to conduct PCR analysis from single rice grain. This kit consists of effective DNA purification system that adopts EzSep™ Filter column for removal of impurities simply in lysate and serves optimized buffer for elimination of PCR inhibitors during DNA isolation without the use of phenol / chloroform extraction or alcohol precipitation. The prepared DNA is ready for use in PCR to analyze rice genome.

Features and Benefits

- Spin or vacuum column format
- Stable and consistent DNA extraction from single rice grain
- Perfect removal of second metabolites
- No use of organic solvents

Exgene™ Rice SV mini

Format : Column Type G (mini),
EzSep™ Filter (with 2.0 ml collection tube)

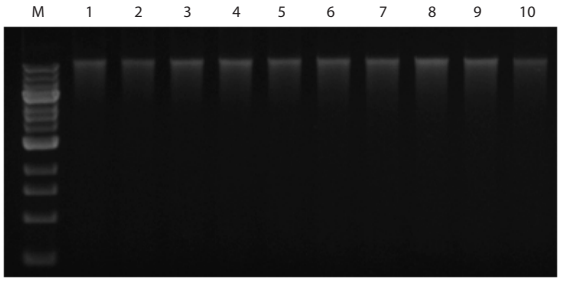
Sample size : 1 grain of rice

Max. loading volume : ~ 750 μℓ

Max. elution volume : ~ 30 μℓ

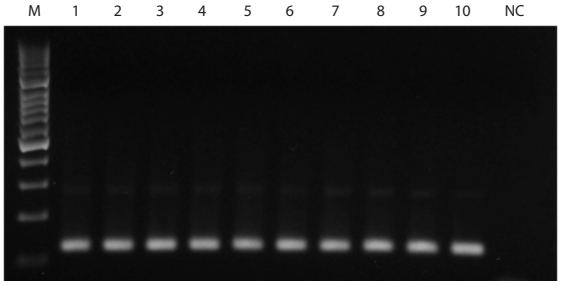
Cat. No.	Products	Type	Size
127-101	Exgene™ Rice SV mini	mini / spin	100

Consistent Result from Various Samples



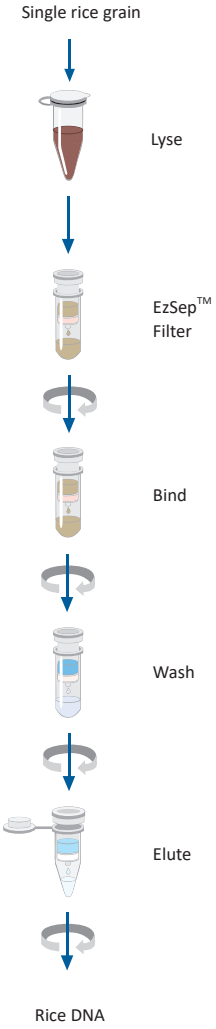
Total DNA purified from various rice grains using Exgene™ Rice SV mini is resolved on 1% agarose gel.
Lane M : 1 kb DNA ladder

PCR Amplification



PCR was performed with total DNA purified from several rice grains using Exgene™ Rice SV mini as template. Rice specific primer was used for gene amplification.
Lane M : 100 bp DNA ladder

Procedures



Component list
Column Type G (with collection tube)
EZSep™ Filter (with collection tube)
Buffer GL
Buffer PP
Buffer TB
Buffer CW
Buffer AE
Proteinase K
PK Storage buffer
Protocol Handbook

GenEx™ Blood / Cell / Tissue

For the isolation of gDNA from whole blood, cultured cells, animal tissues and etc.

Description

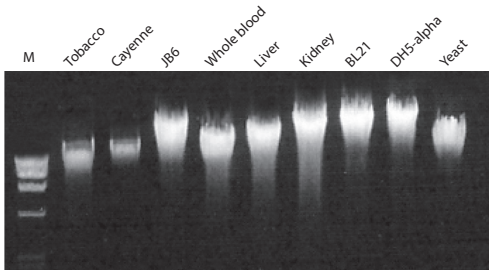
GenEx™ Series provide convenient methods for the isolation of total DNA from various biological samples without use of toxic chemical such as phenol or chloroform. These kits utilize the specially formulated buffer system in order to process the sample scalably and obtain the almost intact size of genomic DNA. Extracted genomic DNA can be applied directly to PCR, southern blotting and restriction enzyme assay and other downstream applications.

GenEx™ Series can be used for :
GenEx™ Blood-Whole blood or blood derivatives
GenEx™ Cell-Cultured cells or gram negative bacteria
GenEx™ Tissue-Animal tissues

Features and Benefits

- Specially formulated buffer system
- DNA preparation from diverse sample : whole blood, cultured cells, yeast, bacteria, animal tissues and etc.
- Recovery of very high molecular weight DNA
- Rescalable preparation depending on sample amount
- No organic extraction
- High purity : ready for PCR, southern blotting and other downstream applications

DNA Extraction from various samples



Genomic DNA prepared from several kinds of organism using *GenEx*™ series. 5 μℓ of eluate from each sample was resolved on 0.7% agarose gel.

Cat. No.	Products	Type	Size
220-101	*GenEx*™ Blood	Sx / Solution	100
220-105	*GenEx*™ Blood	Sx / Solution	500
220-301	*GenEx*™ Blood	Lx / Solution	100
221-101	*GenEx*™ Cell	Sx / Solution	100
221-105	*GenEx*™ Cell	Sx / Solution	500
221-301	*GenEx*™ Cell	Lx / Solution	100
222-101	*GenEx*™ Tissue	Sx / Solution	100
222-105	*GenEx*™ Tissue	Sx / Solution	500
222-301	*GenEx*™ Tissue	Lx / Solution	100

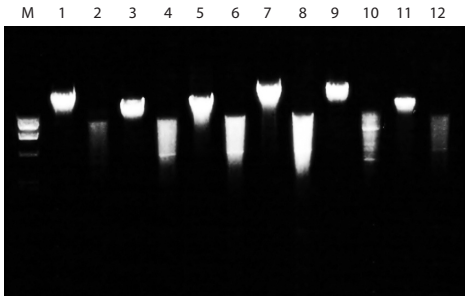
** Sx On the basis of DNA purification from 300 μℓ whole blood, 2 x 10^6 cells or 10 mg animal tissue*
Lx On the basis of DNA purification from 10 ml whole blood, 1 x 10^8 cells or 100 mg animal tissue

DNA Yields from Various Starting Materials

Materials	Species	Amount	Yields of DNA
Whole blood *	Human	300 µℓ	5 ~ 15 µg
		3 ml	80 ~ 150 µg
		10 ml	250 ~ 500 µg
	Mouse	300 µℓ	6 ~ 7 µg
Buffy coat *	Human	150 ~ 250 µℓ	50 ~ 150 µg
Body fluids	Human	50 µℓ	0.1 ~ 2.5 µg
Cultured cell lines	CHO	2 x 10^6 cells	14 ~ 16 µg
	RAW264.7	2 x 10^6 cells	16 ~ 17 µg
	COS	1.5 x 10^6 cells	9 ~ 12 µg
	K562	3 x 10^6 cells	15 ~ 30 µg
	NIH3T3	2 x 10^6 cells	9 ~ 13 µg
	PC12	8 x 10^6 cells	5 ~ 8 µg
Animal tissue	Mouse Liver	10 mg	20 ~ 25 µg
	Mouse Pancreas	10 mg	70 ~ 75 µg
	Mouse Heart	10 mg	2 ~ 4 µg
	Mouse Tail	1 cm of tail tip	15 ~ 30 µg
Gram(-) bacteria	*E.coli* / JM109	2 x 10^9 cells	18 ~ 25 µg
	E.cloacae	6 x 10^9 cells	20 ~ 26 µg

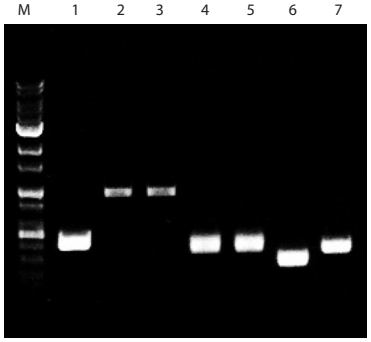
* Yield depends on the quantity of white blood cells present.

Compatibility Test with Restriction Enzymes



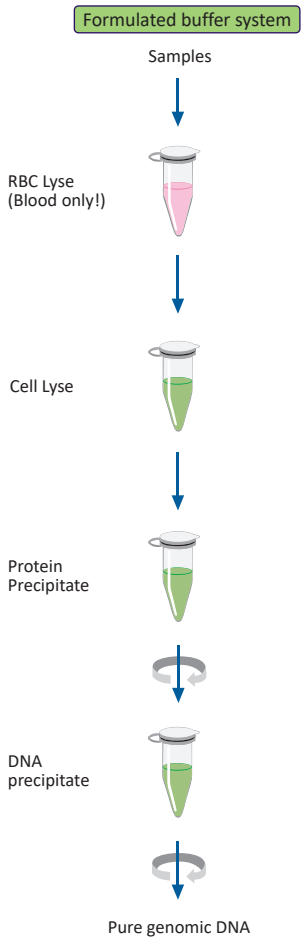
Genomic DNA purified from various organism samples using *GenEx*™ series was partially digested with HindIII (Lane 2, 4, 6, 8, 10, and 12). Lane 1, 3, 5, 7, 9 and 11 represent undigested DNA.
Lane M : Lambda-HindIII

PCR Amplification



PCR reaction was performed with purified DNA using *GenEx*™ series. Template DNA was isolated from Tobacco (Lane 1), BL21 (Lane 2), DH5α (Lane 3), Liver (Lane 4), Kidney (Lane 5), Whole blood (Lane 6) and JB6 (Lane 7).
Lane M : 1 kb ladder

Procedures



Component list

Buffer RL (*GenEx*™ Blood only)
Buffer AL
Buffer PP
Buffer RE
RNase A (20 mg / ml), (*GenEx*™ Cell / Tissue)
Proteinase K (*GenEx*™ Tissue only)
PK Storage buffer (*GenEx*™ Tissue only)
Protocol Handbook

GenEx™ Plant (Plus)

For the isolation of total DNA from various plant samples

Description

GenEx™ Plant kit provides an easy and convenient method for the isolation of total DNA from various plant samples without use of toxic chemical such as phenol or chloroform. This kit has a specially formulated solution format and enables the scalable preparation of almost intact size DNA. Especially when purifying DNA from plant, the removal of secondary metabolites is very important because contamination of these impurities can lead to inhibition of downstream application. The optimized buffer system adopted in this kit can facilitate the removal of contaminants, such as second metabolites and other impurities. Purified DNA can be applied directly to PCR, blotting, restriction enzyme assay and other downstream applications.

GenEx™ Plant Plus kit has an additional feature, EzSep™ Filter. With certain plant samples, it is very difficult to separate cleared supernatant from pelletal debris at a protein precipitation stage. This problem also appears often when large starting sample and it may be due to low density of debris and / or low centrifugal force with conventional centrifuge. EzSep™ Filter included in the Plus kit is the device to solve this problem and moreover it decreases the preparation time also.

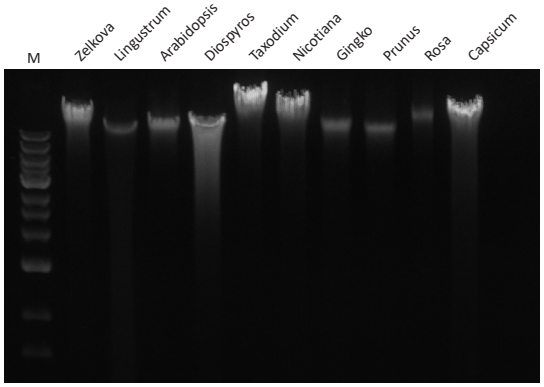
Features and Benefits

- Specially formulated buffer system
- DNA preparation from various plant sampls
- Recovery of very high molecular weight DNA
- Rescalable preparation depending on sample amount
- No organic extraction
- High purity : ready for PCR, Southern blotting and other downstream applications
- Simple separation of supernatant by EzSep™ Filter (Plus only)

Cat. No.	Products	Type	Size
227-101	*GenEx*™ Plant	Sx / Solution	100
227-201	*GenEx*™ Plant	Mx / Solution	100
227-301	*GenEx*™ Plant	Lx / Solution	100
228-101	*GenEx*™ Plant Plus	Sx / Solution	100
228-250	*GenEx*™ Plant Plus	Mx / Solution	50
228-320	*GenEx*™ Plant Plus	Lx / Solution	20

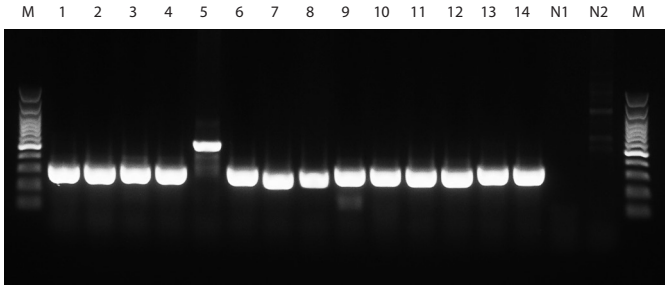
** Sx On the basis of DNA purification from 100 mg plant tissue*
Mx On the basis of DNA purification from 500 mg plant tissue
Lx On the basis of DNA purification from 2 g plant tissue

Result from Various Samples



Total DNA prepared from various plant leaves using *GenEx*™ Plant kit. Each sample was extracted from 100 mg of plant tissue (wet) approximately and 4 $\mu\ell$ of purified DNA was resolved on 1.0% agarose gel.
M : 1 kb DNA ladder

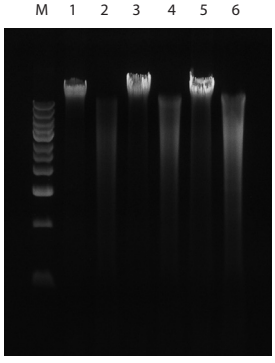
Result from Various Samples



PCR was performed with total DNA purified from various samples using *GenEx*™ Plant as template. The primer set is for a 297 bp fragment of a highly conserved region of chloroplast DNA. PCR products were resolved on 1.2% agarose gel.
Lane M : 100 bp DNA ladder

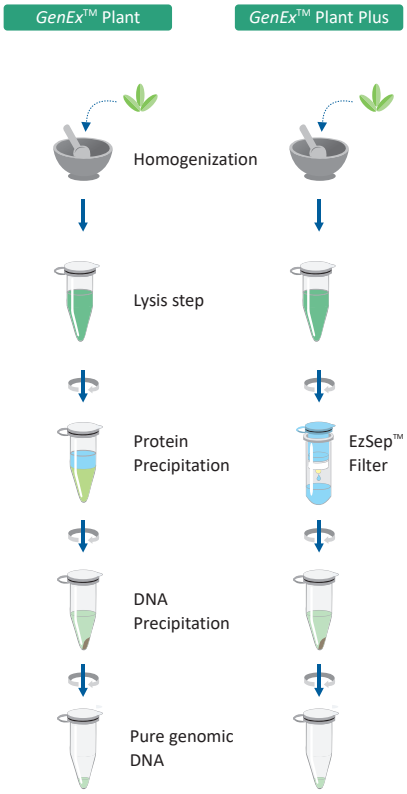
Lane 1 : Zelkova
Lane 2 : Lingustrum
Lane 3 : Arabidopsis
Lane 4 : Diospyros
Lane 5 : Taxodium
Lane 6 : Nicotiana
Lane 7 : Gingko
Lane 8 : Lactuca
Lane 9 : Prunus
Lane 10 : Rosa
Lane 11 : Solanum
Lane 12 : Capsicum
Lane 13 : Citrus
Lane 14 : Actinidia
Lane N1 : Negative control 1-no template.
Lane N2 : Negative control 2-*E. coli* gDNA as template.

Compatibility Test with Restriction Enzymes



Total DNA (Lane 1, 3, 5) purified from the leaves of several species using *GenEx*™ Plant was subjected to restricted digestion (Lane 2, 4, 6) by HindIII.
Lane M : 1 kb DNA ladder
Lane 1 : Zelkova
Lane 3 : Taxodium
Lane 5 : Nicotiana

Procedures



Component list
Buffer PL
Buffer PP
Buffer RE
RNase A (100 mg / ml)
EzSep™ Filter (with collection tube), (Plus only)
Protocol Handbook

DirEx™ / DirEx™ *Fast*

Single tube DNA preparation solution for PCR

Description

DirEx™ and DirEx™ *Fast* are designed for the easy and simple preparation of template DNA in PCR applications. The whole procedure can be completed in a single tube and it takes just 8 minutes. The procedure of DirEx™ and DirEx™ *Fast* are composed of two steps, the incubation and the inactivation, which are the lysis of sample and the heat-inactivation of enzyme respectively. DirEx™ is normally performed in a conventional water or dry-bath, but PCR thermal cycler can also be used alternatively. DirEx™ *Fast* has a premixed format which contains all reaction reagents in 8-strip tube and ready to use. It is basically designed to use PCR thermal cycler for whole procedure, although the conventional bath can be employed. The simple procedure of DirEx™ and DirEx™ *Fast* requires neither the centrifuge step nor the additional pipetting, and it facilitates the multiple preparations from many samples. Simultaneous preparation from many samples with minimum handling will help guarantee the fidelity of the analysis.
DirEx™ and DirEx™ *Fast* can be used for the preparation of template DNA from a wide range of biological and forensic samples, such as mammalian blood, hairs, tissues, swabs, blood stains, cigarette butts and cultured cells. Prepared DNA can be applied directly to PCR applications and / or stored in a freezer for storage.

Features and Benefits

- Specially formulated buffer system as single tube PCR-template preparation solution
- Ready for PCR in just 8 minutes
- Easy and simple procedure : only two steps
- Stable and consistent result
- Instant use : No need of additional reagents
- Pre-mixed format for minimal handling : DirEx™ *Fast*
- Optimized protocols for various samples such as cell, tissue, hair, buccal swab, blood, cigarette butts

DirEx™ / DirEx™ *Fast*

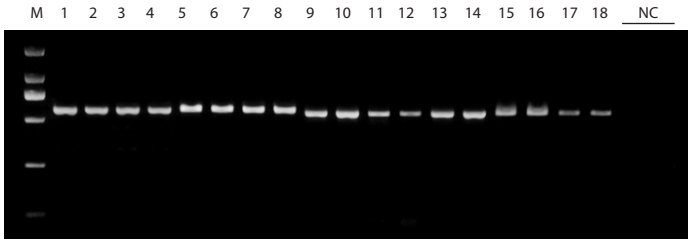
Format : Solution / Solution (0.2 ml 8-strip tubes)

Sample size : - 10 mg animal tissue
- 20 μℓ whole blood
- 5 x 10^6 cultured cells

Preparation time : 8 min

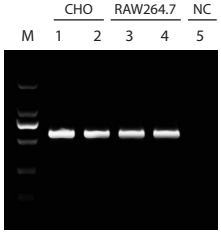
Cat. No.	Products	Type	Size
250-101	DirEx™	Solution	100
260-011	DirEx™ *Fast*-Tissue	Solution	96 T (8-strip tube x 12)
260-021	DirEx™ *Fast*-Cultured cell	Solution	96 T (8-strip tube x 12)
260-031	DirEx™ *Fast*-Whole blood	Solution	96 T (8-strip tube x 12)
260-041	DirEx™ *Fast*-Blood Strain	Solution	96 T (8-strip tube x 12)
260-051	DirEx™ *Fast*-Hair	Solution	96 T (8-strip tube x 12)
260-061	DirEx™ *Fast*-Buccal swab	Solution	96 T (8-strip tube x 12)
260-071	DirEx™ *Fast*-Cigarette	Solution	96 T (8-strip tube x 12)

Result from Various Samples

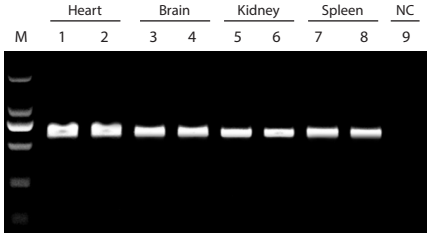


PCR analysis was performed with extracted DNA using DirEx™.
Template DNA was isolated from CHO cells (Lane 1, 2), RAW264.7 cells (Lane 3, 4), Heart (Lane 5, 6), Brain (Lane 7, 8), Whole blood (Lane 9, 10), Dried blood spot (Lane 11, 12), Hair follicle (Lane 13, 14), Buccal swab (Lane 15, 16), Cigarette butts (Lane 17, 18).
Lane NC : Negative control
Primer : Beta-actin (Lane 1 ~ 8, Rat), Globin (Lane 9 ~ 18, Human)
Lane M : 250 bp ladder

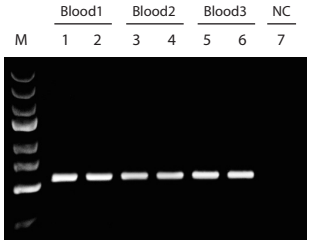
Compatibility Test with Restriction Enzymes



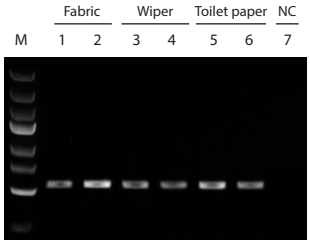
Total DNA was isolated from two types of mammalian cells using DirEx™ *Fast*-Cultured cell.
Lane NC : Negative control
Primer : Beta-actin (Rat)



PCR analysis was carried out with DNA isolated by DirEx™ *Fast*-Tissue. Template DNA was extracted from mammalian tissues (RAT) such as heart, brain, kidney, and spleen.
Lane NC : Negative control
Primer : Beta-actin (Rat)



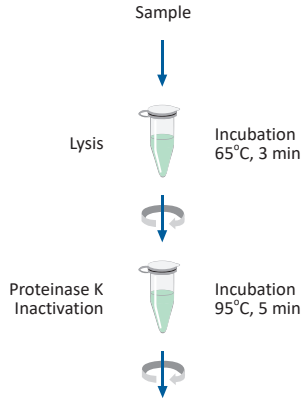
Total DNA was extracted from three types of human blood using DirEx™ *Fast*-Whole blood. The template DNA was amplified by PCR.
Lane NC : Negative control
Primer : Globin (Human)



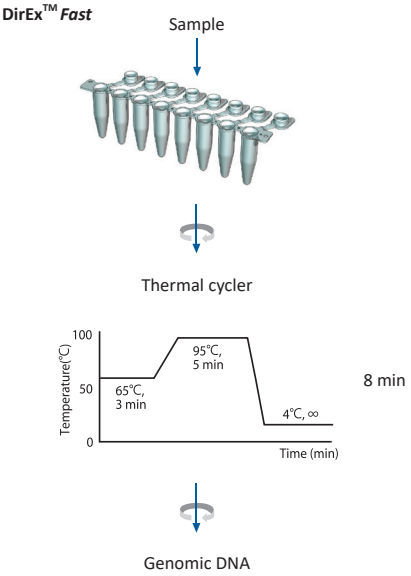
PCR analysis was confirmed with DNA isolated by DirEx™ *Fast*-Blood stain.
The template DNA was isolated from three types of dried blood stained on fabric, wiper, and toilet paper.
Lane NC : Negative control
Primer : Globin (Human)

Procedures

DirEx™



DirEx™ *Fast*



Component list

DirEx™ Solution
Proteinase K
PK Storage buffer
Buffer A

DirEx™ *Fast* series :
DirEx™ *Fast*-Tissue
DirEx™ *Fast*-Cultured cell
DirEx™ *Fast*-Whole blood
DirEx™ *Fast*-Blood strain
DirEx™ *Fast*-Hair
DirEx™ *Fast*-Buccal swab
DirEx™ *Fast*-Cigarette
Protocol Handbook

Selection Guide

For RNA Purification

Hybrid-R™ / RiboEx™ / Ribospin™ / Allspin™ / RiboSaver™ Series

RiboEx™ series are designed for total RNA isolation from various samples. RiboEx™ is based on the disruption of cells in a monophasic lysis solution containing phenol and salt followed by alcohol precipitation of the RNA. Hybrid-R™ eliminates alcohol precipitation by binding of RNA with column. RiboEx™ LS is a concentrated form of RiboEx™ and for total RNA isolation from liquid samples, while RiboEx™ is more suitable for solid samples and pelleted cells. Riboclear™ provides an easy and rapid method for RNA cleanup or concentration from various RNA samples in just 6 minutes. Ribospin™ series provide fast and easy method in convenient spin column format and isolate highly purified RNA in 15 minutes. Allspin™ total DNA / RNA purification kit provides a convenient method for the isolation of total DNA and total RNA simultaneously from a single sample of tissue or cultured cells. RiboSaver™ is a preservation solution to stabilize cellular RNA in biological specimens such as tissues and cultured cells.

Sample Type	Hybrid-R™	Hybrid-R™ Blood RNA	Hybrid-R™ miRNA	RiboEx™	RiboEx™ LS	Ribospin™	Ribospin™ II *	Ribospin™ vRD (Plus) **	Ribospin™ vRD II **	Ribospin™ Plant	Ribospin™ Seed / Fruit	Riboclear™ (Plus) ****	Allspin™ ***	RiboSaver™
Animal cells	○	-	○	○	○	○	○	-	-	-	-	-	○	-
Animal tissues	○	-	○	○	△	○	○	-	-	-	-	-	○	-
Plant tissues	△	-	-	○	△	-	-	-	-	○	-	-	-	-
Bacteria	○	-	○	○	○	△	△	-	-	-	-	-	-	-
Yeast	○	-	○	○	○	△	△	-	-	-	-	-	-	-
Whole blood	-	○	-	-	○	-	-	-	-	-	-	-	-	-
Buffy coat	○	○	○	○	○	○	○	-	-	-	-	-	○	-
Seed	-	-	-	-	-	-	-	-	-	-	○	-	-	-
Fruit	-	-	-	-	-	-	-	-	-	-	○	-	-	-
Rhizome	-	-	-	-	-	-	-	-	-	-	○	-	-	-
Various liquid sample	-	△	-	-	△	-	-	△	△	-	-	-	-	-
Viral sample	-	-	-	-	-	-	-	○	○	-	-	-	-	-
RNA cleanup / concentration	-	-	-	-	-	-	-	-	-	-	-	○	-	-
RNA stabilization	-	-	-	-	-	-	-	-	-	-	-		-	○

○ Recommended / △ Recomended with additional preparation step

** Ribospin™ II provides DNase I for removal of contamination DNA. (on-column digestion under 10 minutes)*

*** Ribospin™ vRD Plus and vRD II provide carrier RNA for purification of nucleic acid from very small amounts of sample.*

**** Allspin™ provides the method for the purification of genomic DNA and total RNA from tissues and cultured cells.*

***** Riboclear™ Plus provides DNase I for removal of contaminated DNA.*

All columns in GeneAll® RNA related products are provided as individual packs (blister packs) to minimize the contamination.

04. RNA Purification System

Hybrid-R™

For the isolation of total RNA from tissues and cultured cells

Description

Hybrid-R™ provides an easy and rapid method for the isolation of highly purified total RNA from samples of human, animal, plant, yeast, bacterial and viral origin. Hybrid-R™ eliminates alcohol precipitation by binding of RNA with column, allowing rapid and convenient preparation from a large number of samples simultaneously.
Hybrid-R™ can yield up to 500 μg depending on the type of tissue sample used and complete all process to prepare total RNA in just 30 minutes. The purified total RNA is suitable for the isolation of mRNA, northern blotting, dot blotting, *in vitro* translation, cloning, RT-PCR, RNase protection assays and other analytical procedures.

Features and Benefits

- Preparation time : ~ 30 minutes
- Accurate and consistent yield from animal tissue, cultured cell line, plant, *E. coli* and various biological samples
- High purity and yield
- No genomic DNA contamination
- No ethanol precipitation
- Ready for use in RT-PCR, northern blotting, dot blotting, *in vitro* translation, molecular cloning, real-time PCR, RNase protection assays and other analytical procedures

Hybrid-R™

Format : Column Type G
(with 2.0 ml collection tube)

Sample size : ~ 100 mg tissue or 1 x 10^7 cells

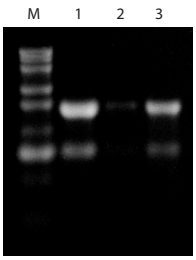
Application volume : ~ 700 μℓ

Min. elution volume : 30 μℓ

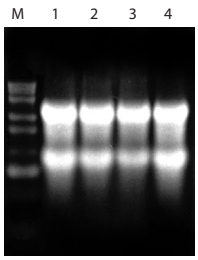
Binding capacity : ~ 500 μg

Cat. No.	Products	Type	Size
305-101	Hybrid-R™	Spin	100

RNA Purification Results I

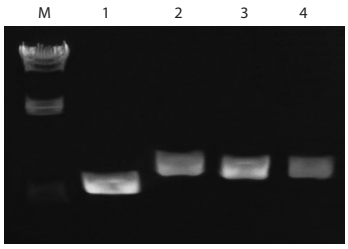


Total RNA was purified from *E. coli* (OD_{600} ≒ 1.8) using several RNA extraction kits of different companies. *E. coli* cells were taken to the total RNA purification.
The purified total RNA was loaded on a 1% formaldehyde gel.
Lane M : 0.5 ~ 10 kb RNA ladder
Lane 1 : Total RNA from Hybrid-R™
Lane 2 : Total RNA from supplier A
Lane 3 : Total RNA from supplier B



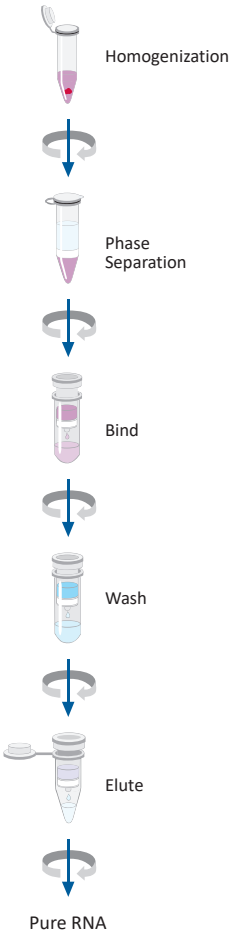
Total RNA was purified from rat liver using several RNA extraction kits of different companies.
The purified total RNA was loaded on a 1% formaldehyde gel.
Lane M : 0.5 ~ 10 kb RNA ladder
Lane 1 : Total RNA from Hybrid-R™
Lane 2 : Total RNA from supplier A
Lane 3 : Total RNA from supplier B
Lane 4 : Total RNA from supplier C

RNA Purification Results II



Total RNA was purified from various samples using Hybrid-R™.
And then, the cDNA was synthesized by reverse transcriptase.
The cDNA was amplified by PCR and confirmed by electrophoresis.
Lane M : Lambda-HindIII
Lane 1 : PCR of *E. coli* cDNA
Lane 2 : PCR of Rat kidney cDNA
Lane 3 : PCR of Rat liver cDNA
Lane 4 : PCR of Rat heart cDNA

Procedures



Component list
RiboEx™
Column Type F (with collection tube)
1.5 ml microcentrifuge tube
Buffer RB1
Buffer SW1
Buffer RNW
Nuclease-free water
Protocol Handbook

Hybrid-R™ Blood RNA

For the isolation of total RNA from whole blood

Description

Hybrid-R™ Blood RNA is a complete kit with ready-to-use reagent for the isolation of total RNA from up to 0.25 ml whole blood sample. This kit utilizes the lysis method of RiboEx™ LS which has a powerful ability of cell-lysis and the purification method based on glassfiber membrane technology. Fast and convenient procedure of Hybrid-R™ Blood RNA takes only 30 minutes for complete preparation of pure RNA. Whole blood sample is homogenized and lysed in RiboEx™ LS, a mono phasic solution containing phenol and guanidium salt, which rapidly lyse cells and inactivates nucleases. In conventional methods, the erythrocytes of mammalian blood which does not contain nuclei (and therefore, RNA either) should be removed by pre-treatment such as osmotic lysis for the separation of leukocytes from whole blood. This additional treatments increase the experiment time and the possibility of RNA-breakage, followed by decline of RNA-quality.

Hybrid-R™ Blood RNA does not need the additional treatment of blood sample, and whole blood is lysed in RiboEx™ LS in just one step. Then addition of chloroform brings about a separation of the lysate into aqueous and organic phases. After phase-separating, DNA and protein remain in the interphase and the organic phase respectively but released RNA exists in the aqueous phase. The aqueous phase is picked and applied to a EzPure™ Filter to eliminate small amount of contaminated DNA and other blood contaminants. The passed-through is mixed with Buffer RB1, RNA binding buffer, and then the mixture is applied to a Column Type W. After a series of washing with Buffer RBW and RNW, pure RNA can be eluted by Nuclease-free water.

Hybrid-R™ Blood RNA is suitable for RNA preparation from 0.1 ml to 0.25 ml mammalian whole blood. The typical yield is 3 μg per 0.25 ml whole blood. The purified RNA can be applicable for the isolation of Poly A^+ RNA, northern blotting, dot blotting, *in vitro* translation, cloning, RT-PCR, RPA and other analytical procedures.

Features and Benefits

- Preparation time : ~ 30 minutes
- Accurate and consistent yield from whole blood
- High purity and yield
- Sample size : 100 ~ 250 μℓ / prep
- No ethanol precipitation
- No genomic DNA contamination

Hybrid-R™ Blood RNA

Format : Column Type W
(with 2.0 ml collection tube)

Sample size : ~ 250 μℓ whole blood

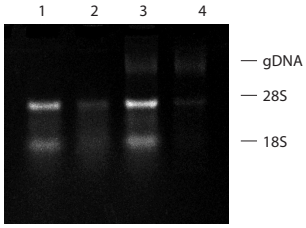
Application volume : ~ 700 μℓ

Min. elution volume : 30 μℓ

Binding capacity : 100 μg

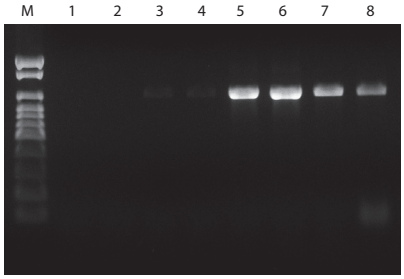
Cat. No.	Products	Type	Size
315-150	Hybrid-R™ Blood RNA	Spin	50

Comparison Data

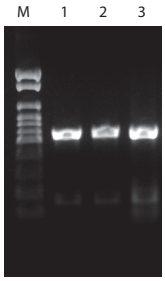


Total RNA was extracted from whole blood using several RNA extraction kits of different companies. The extracted total RNA was loaded on a 1% formaldehyde gel.
Lane 1 : Total RNA from Hybrid-R™ Blood RNA for 250 μℓ of whole blood
Lane 2 : Total RNA from supplier A for 500 μℓ of whole blood
Lane 3 : Total RNA from supplier B for 500 μℓ of whole blood
Lane 4 : Total RNA from supplier C for 250 μℓ of whole blood

Verification of Genomic DNA Contamination and RT-PCR Result

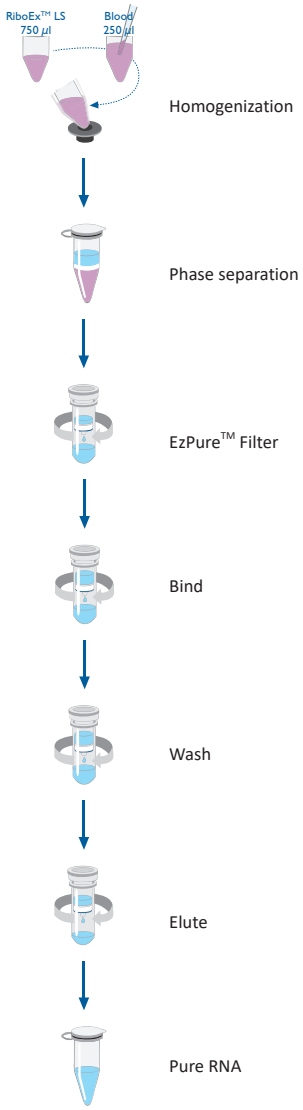


As analysis of genomic DNA contamination, PCR for amplication of human beta-actin was performed with eluates purified from whole blood using several kits of other companies.
Lane M : 1 Kb ladder
Lane 1, 2 : PCR of the eluate from Hybrid-R™ Blood RNA
Lane 3, 4 : PCR of the eluate from supplier A
Lane 5, 6 : PCR of the eluate from supplier B
Lane 7, 8 : PCR of the eluate from supplier C



Total RNA was extracted from whole blood using Hybrid-R™ Blood RNA and other supplier kits. And then the cDNA was synthesized by reverse transcriptase. The cDNA was amplified by human beta-actin primer and confirmed by electrophoresis.
Lane M : 1 Kb ladder
Lane 1 : PCR of cDNA from Hybrid-R™ Blood RNA
Lane 2 : PCR of cDNA from supplier A
Lane 3 : PCR of cDNA from supplier B

Procedures



Component list
Column Type W (with collection tube)
EzPure™ Filter (with collection tube)
1.5 ml microcentrifuge tube
RiboEx™ LS
Buffer RB1
Buffer RBW
Buffer RNW
Nuclease-free water
Protocol Handbook

Hybrid-R™ miRNA

For purification of large and small RNA separately from cultured cells or animal tissues

Description

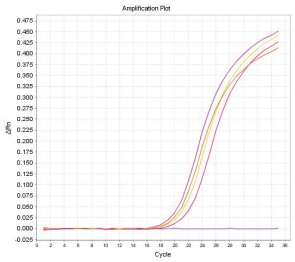
In recent years, interest in small RNA, such as siRNA and miRNA which are related to research of gene regulation, has expanded. There are many commercial kits for total RNA preparation, but most of these are focused on preparation of large RNA longer than 200 nucleotides. Because both siRNA and miRNA are between 15 ~ 30 nucleotides in length, the need of specially optimized kit for small RNA (< 200 nucleotides) is growing rapidly. Hybrid-R™ miRNA is designed for purification of large and small RNA separately from culture cells or animal tissues and co-purification in a single tube is also available by modified protocol. This kit utilizes the lysis method of RiboEx™ which has a powerful ability of lysis and the purification method based on glassfiber membrane technology. Samples are homogenized in RiboEx™, a monophasic solution containing phenol and guanidium salt, which rapidly lyse cells and inactivates nucleases. Addition of chloroform brings about a separation of the lysate into aqueous and organic phases. Total RNA locates in the aqueous phase while DNA and protein remain in the interphase and organic phase. Large and small RNA in the aqueous phase are selectively bound to Column Type B and Type W respectively. The Column Type B selectively adsorbs the RNA larger than 200 nucleotides in length, while the Column Type W specifically holds the RNA smaller than 200 nucleotides in length. To purify large RNA, the aqueous phase is mixed with ethanol and the mixture is applied to a Column Type B. After centrifugation, large RNA is bound to membrane and the mixture containing small RNA goes into collection tube through the membrane. The membrane is washed away by two wash buffer (SW1 and RNW) and purified large RNA is eluted from the membrane by Nuclease-free water. To purify small RNA, the pass-through come from the binding of large RNA is mixed with ethanol and then applied to a Column Type W. After washing with Buffer RBW and RNW, small RNA is eluted by Nuclease-free water. The procedure of Hybrid-R™ miRNA takes only 30 minutes for complete preparations of pure RNA. The purified RNA is suitable for the isolation of Poly A^+ RNA, northern blotting, dot blotting, *in vitro* translation, cloning, RT-PCR, RPA and other analytical procedures.

Features and Benefits

- Preparation time : ~ 30 minutes
- Stable and consistent yield
- High purity and yield
- Perfect separation of small RNA fragment
- Sample size : ~ 50 mg tissue / ~ 1 x 10^7 cultured cells
- Recovery range : Large RNA : > 200 nucleotides
  Small RNA : < 200 nucleotides
- No ethanol precipitation
- No genomic DNA contamination
- Ready for use in northern blotting, dot blotting, *in vitro* translation, cloning, RT-PCR, RPA and other analytical procedures

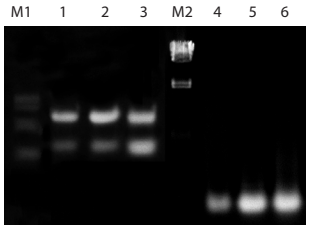
Cat. No.	Products	Type	Size
325-150	Hybrid-R™ miRNA	Spin	50

Real-Time PCR Result of miR-24 from Small RNA



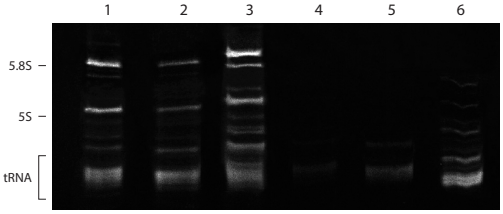
Real-time PCR was performed with purified small (micro) RNA using Hybrid-R™ miRNA kit. Small RNA was extracted from CHO cell, RAW264.7 cell and rat heart and liver. And then RT-PCR of miR-24 was performed using miScript PCR system (Qiagen). Amplified miR-24 was detected by 7500 Real-Time PCR system (Applied Biosystems).

Experimental Results I



Large and small RNA were extracted from CHO (chinese hamster ovary) cell, RAW264.7 cell and rat lung tissue using Hybrid-R™ miRNA.
The purified large RNA was loaded on a 1% formaldehyde gel and small RNA was loaded on a 1% agarose gel.

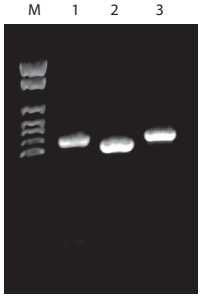
Lane M1 : 0.5 ~ 10 kb RNA ladder
Lane 1 : Large RNA from CHO cell
Lane 2 : Large RNA from RAW264.7 cell
Lane 3 : Large RNA from rat lung
Lane M2 : Lambda-HindIII
Lane 4 : Small RNA from CHO cell
Lane 5 : Small RNA from RAW264.7 cell
Lane 6 : Small RNA from rat lung



miRNA was extracted using several miRNA extraction kits of different companies. The extracted miRNA was loaded on a 15% urea-acrylamide gel.

Lane 1 : miRNA from Hybrid-R™ miRNA for CHO cell
Lane 2 : miRNA from Hybrid-R™ miRNA for RAW264.7 cell
Lane 3 : miRNA from Hybrid-R™ miRNA for rat lung
Lane 4 : miRNA from supplier A for CHO cell
Lane 5 : miRNA from supplier A for RAW264.7
Lane 6 : miRNA from supplier A for rat lung

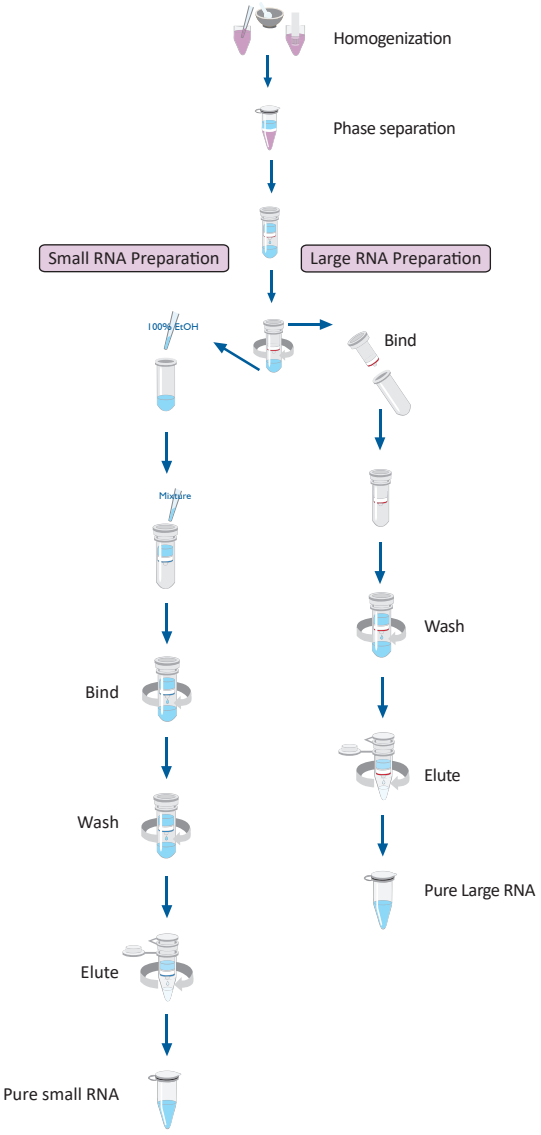
Experimental Results II



Large RNA was purified from CHO cell, RAW264.7 cell and rat lung tissue using Hybrid-R™ miRNA.
And then cDNA was sythesized by reverse transcriptase. The cDNA was amplified by beta-actin primer and confirmed by eletrophoresis.

Lane M : 1kb ladder
Lane 1 : PCR of cDNA from CHO cell
Lane 2 : PCR of cDNA from RAW264.7
Lane 3 : PCR of cDNA from rat lung

Procedures



Component list

Column Type B (red ring),
(with collection tube)
Column Type W (blue ring),
(with collection tube)
2.0 ml collection tube
1.5 ml microcentrifuge tube
RiboEx™
Buffer SW1
Buffer RBW
Buffer RNW
Nuclease-free water
Protocol Handbook

RiboEx™

For total RNA isolation from various samples

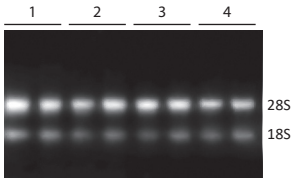
Description

RiboEx™ is a complete kit with ready-to-use reagents for the isolation of total RNA from samples of human, animal, plant, yeast, bacterial and viral origin. RiboEx™ is based on the disruption of cells in guanidine salt / detergent solution, followed by organic extraction and alcohol precipitation of the RNA, and it allows simultaneous processing of a large number of samples. RiboEx™ can yield up to 10 μg / 1 mg tissue or up to 22 μg / 1 x 10^7 cultured cells of highly purified total RNA. The resulting total RNA is suitable for the isolation of poly A^+ RNA, northern blotting, dot blotting, *in vitro* translation, cloning, RT-PCR, RNase protection assays and other analytical procedures.

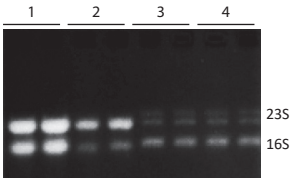
Features and Benefits

- Format : Monophase solution type
- Sample size : ~ 100 mg tissue
  ~ 1 x 10^7 cells
- Preparation time : 50 ~ 65 minutes
- Typical yield : ~ 10 μg / 1 mg tissue
  ~ 22 μg / 1 x 10^7 cultured cells
- High purity : $OD_{260/230}$ > 2.0, $OD_{260/280}$ > 1.8
- Accurate and consistent yield from animal tissue, cultured cell line, plant, *E. coli* and various biological samples
- Accurate and easy phase separation
- Ready for use in RT-PCR, northern blotting, dot blotting, *in vitro* translation, molecular cloning, real-time PCR, RNase protection assays and other analytical procedures

RNA Purification Results



Total RNA was purified from rat brain using several RNA extraction kits of different companies. The purified total RNA was loaded on a 1% formaldehyde gel.
Lane 1 : Total RNA from RiboEx™
Lane 2 : Total RNA from Supplier A
Lane 3 : Total RNA from Supplier B
Lane 4 : Total RNA from Supplier C



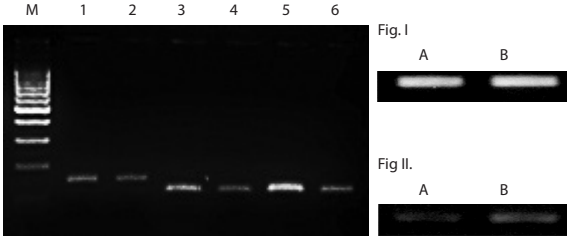
Total RNA was purified from *E. coli* DH5α using several RNA extraction kits of different companies.
E. coli cells were taken to the total RNA purification. The purified total RNA was loaded on a 1% formaldehyde gel.
Lane 1 : Total RNA from RiboEx™
Lane 2 : Total RNA from Supplier A
Lane 3 : Total RNA from Supplier B
Lane 4 : Total RNA from Supplier C

Cat. No.	Products	Type	Size
301-001	RiboEx™	Solution	100
301-002	RiboEx™	Solution	200

Total RNA Yield from Various Starting Materials Using RiboEx™

Materials	Sample type	Amount	Yields of RNA
Cell Lines	CHO	1.5 x 10^6 cells	~ 20 μg
Animal Tissue	Liver	1 mg	~ 10 μg
	Spleen	1 mg	~ 10 μg
	Kidney	1 mg	~ 4 μg
	Brain	1 mg	~ 1.5 μg
Gram(-) Bacteria	*E. coli*	$O.D_{600}$ ≒ 1.8 (1.5 ml pellet)	~ 60 μg

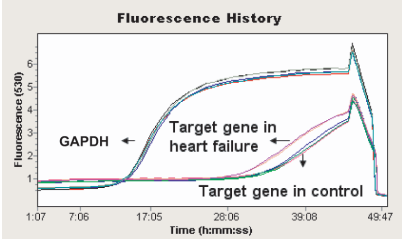
RT-PCR Results



Total RNA was purified from Mouse ES cell using RiboEx™ and supplier A kits. And then, the cDNA was synthesized by reverse transcriptase. The cDNA was amplified by PCR and confirmed by electrophoresis.
Lane M : 1 Kb ladder
Lane 1, 3, 5 : PCR of cDNA from RiboEx™
Lane 2, 4, 6 : PCR of cDNA from supplier A
Lane 1, 2 : amplified by β-actin primer
Lane 3, 4, 5, 6 : amplified by Oct 4 primer

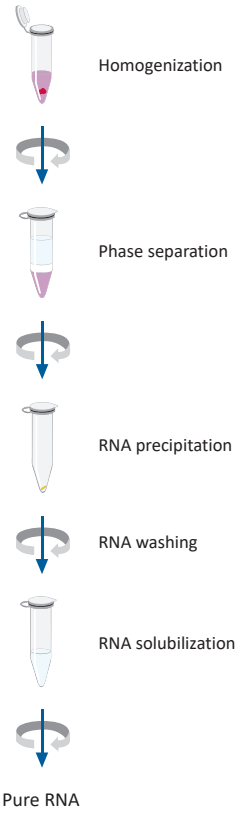
Fig I, II Total RNA was purified from 293 cell using RiboEx™ and supplier A kits. And then the cDNA was synthesized by reverse transcriptase. The cDNA was amplified by PCR and confirmed by electrophoresis.
Lane A : supplier A kit
Lane B : RiboEx™
Fig I : amplified by GAPDH primer
Fig II : amplified by Hif-1 primer

Real-Time PCR Amplication



Real-time PCR was performed with purified total RNA using RiboEx™ total RNA isolation kit. Total RNA was extracted from rat atrium. And then the cDNA was synthesized by reverse transcriptase. Reference was confirmed by GAPDH primer and target gene was confirmed by ET-1 primer in the experimental and control group.

Procedures



Component list

RiboEx™
Protocol Handbook

RiboEx™ LS

For total RNA isolation from various liquid samples

Description

RiboEx™ LS is a complete kit with ready-to-use reagents for the isolation of total RNA from various liquid samples. RiboEx™ LS is a concentrated form of RiboEx™ and this allows that liquid samples can be processed more easily with it, while RiboEx™ is more suitable for solid samples and pelleted cells. RiboEx™ LS is a mono-phasic solution containing phenol and guanidine salt, which rapidly lyse cells and inactivates nucleases. Addition of chloroform brings about a separation of the homogenate in aqueous and organic phases. RNA locates in the aqueous phase while DNA and protein remain in the interphase and organic phases. The aqueous phase including RNA is mixed with isopropanol and the RNA which is precipitated by centrifuging. The purified total RNA is suitable for RT-PCR, northern blotting, dot blotting, *in vitro* translation, molecular cloning, real-time PCR, RNase protection assays and other analytical procedures.

Features and Benefits

- Format : Monophase solution type
- Sample size : ~ 0.25 ml liquid sample
  ~ 100 mg tissue
- Preparation time : 50 ~ 65 minutes
- Typical yield : ~ 30 μg / 1 x 10^6 cultured cells
  ~ 10 μg / 1 mg tissue
- High purity : A_{260} / A_{230} > 2.0, A_{260} / A_{280} > 1.8
- Accurate and consistent yield
- Ready for use in RT-PCR, northern blotting, dot blotting, *in vitro* translation, molecular cloning, real-time PCR, RNase protection assays and other analytical procedures

Genomic DNA Contamination Test and RT-PCR Result

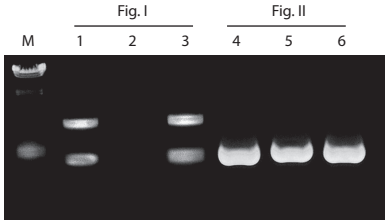


Fig. I Genomic DNA contamination was tested by PCR. Eluate, including total RNA of RAW264.7 cell, from several RNA extraction kits of different companies was the template of PCR and amplified by beta-actin primer.
Lane M : Lambda-HindIII
Lane 1 : PCR of the eluate from supplier A
Lane 2 : PCR of the eluate from RiboEx™ LS
Lane 3 : PCR of the eluate from supplier B

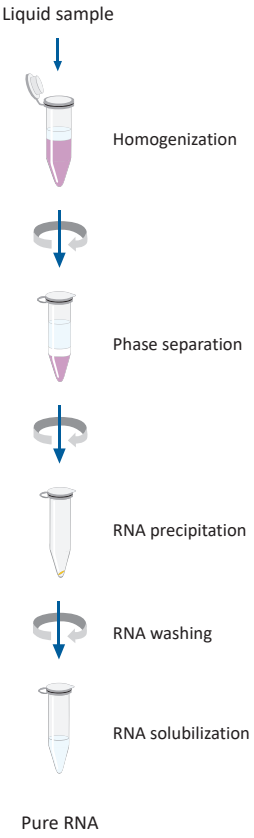
Fig. II Total RNA was extracted from RAW264.7 cell using RiboEx™ LS and supplier kits. And then, the cDNA was synthesized by reverse transcriptase. The cDNA was amplified by PCR and confirmed by electrophoresis.
Lane 4 : PCR of cDNA from supplier A
Lane 5 : PCR of cDNA from RiboEx™ LS
Lane 6 : PCR of cDNA from supplier B

Cat. No.	Products	Type	Size
302-001	RiboEx™ LS	Solution	100
302-002	RiboEx™ LS	Solution	200

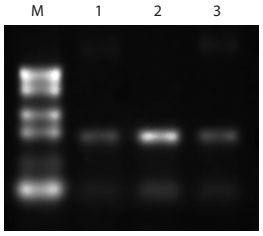
Total RNA Yield from Various Starting Materials Using RiboEx™ LS

Materials	Sample type	Amount	Yields of RNA
Cell Lines	RAW 264.7	1 x 10^6 cells	~ 28 μg
Animal Tissue	Liver	1 mg	~ 10 μg
	Spleen	1 mg	~ 10 μg
	Kidney	1 mg	~ 4 μg
	Brain	1 mg	~ 1.5 μg
Blood	Whole human or animal blood	0.25 ml	~ 1.5 μg
Gram(-) Bacteria	*E. coli*	$O.D_{600}$ ≒ 1.8 (1.5 ml pellet)	~ 60 μg

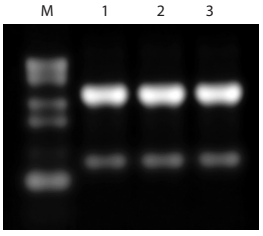
Procedures



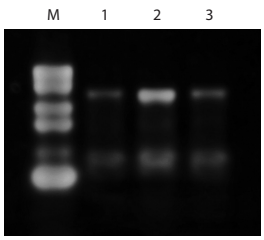
Comparison Data



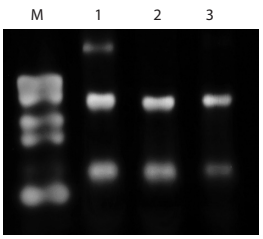
Total RNA was extracted from *E. coli* DH5α using several RNA extraction kits of different companies. The extracted total RNA was loaded on a 1% formaldehyde gel.
Lane 1 : Total RNA from supplier A
Lane 2 : Total RNA from RiboEx™ LS
Lane 3 : Total RNA from supplier B



Total RNA was extracted from CHO (chinese hamster ovary) cell using several RNA extraction kits of different companies. The extracted total RNA was loaded on a 1% formaldehyde gel.
Lane 1 : Total RNA from supplier A
Lane 2 : Total RNA from RiboEx™ LS
Lane 3 : Total RNA from supplier B



Total RNA was extracted from heart tissue of rat using several RNA extraction kits of different companies. The extracted total RNA was loaded on a 1% formaldehyde gel.
Lane 1 : Total RNA from supplier A
Lane 2 : Total RNA from RiboEx™ LS
Lane 3 : Total RNA from supplier B



Total RNA was extracted from whole blood of rat using several RNA extraction kits of different companies. The extracted total RNA was loaded on a 1% formaldehyde gel.
Lane 1 : Total RNA from supplier A
Lane 2 : Total RNA from RiboEx™ LS
Lane 3 : Total RNA from supplier B

Component list

RiboEx™ LS
Protocol Handbook

Ribospin™

For total RNA isolation from animal tissues and cultured cells

Description

Ribospin™ provides a convenient method for isolation of total RNA from cell and tissue samples. Ribospin™ procedures employed the glassfiber membrane technology for the fastest and the most convenient of high purity RNA isolation, instead of conventional alcohol precipitation or phenol / chloroform extraction. Whole procedure takes only 15 minutes and the eluates are suitable for RT-PCR or any downstream application without further manipulation.

Features and Benefits

- Glassfiber membrane technology
- Sample size : ~ 25 mg tissue / ~ 5 x 10^6 cultured cells
- Typical yield : ~ 20 μg / 1 x 10^6 cultured cells
  ~ 60 μg / 10 mg liver tissue
- High purity : A_{260} / A_{230} > 2.0, A_{260} / A_{280} > 1.8
- Preparation time : ~ 15 minutes
- Stable and consistent yield
- No phenol / chloroform extraction
- No ethanol precipitation
- Ready for use in RT-PCR, northern blotting, dot blotting, *in vitro* translation, molecular cloning, real-time PCR, RNase protection assays and other analytical procedures

Ribospin™

Format : Column Type F
(with 2.0 ml collection tube)

Sample size : ~ 25 mg tissue / ~ 5 x 10^6 cells

Application volume : ~ 700 μℓ

Min. elution volume : ~ 40 μℓ

Binding capacity : ~ 500 μg

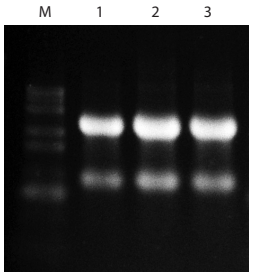
Cat. No.	Products	Type	Size
304-150	Ribospin™	Spin	50

Total RNA Yield from Various Starting Materials Using Ribospin™.

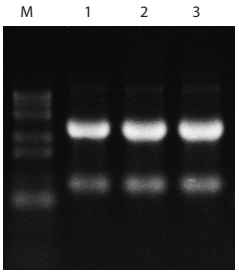
Materials	Sample type	Amount	Yields of RNA
Cultured cell	CHO	1 x 10^6 cells	~ 15 μg
	RAW 264.7	1 x 10^6 cells	~ 20 μg
Tissue	Liver	10 mg	~ 60 μg
	Kidney	10 mg	~ 30 μg
	Spleen	10 mg	~ 35 μg
E. coli	DH5α	$O.D_{600}$ ≒ 1.5 (2 ml pellet)	~ 10 μg

* The yield of total RNA may vary depending on the tissue or cells from which it is obtained.

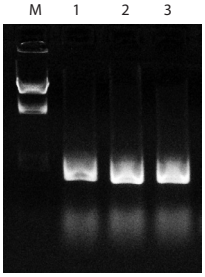
Downstream Application Tests



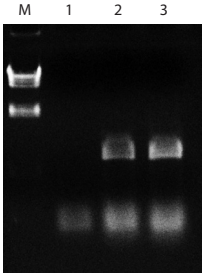
Total RNA was extracted from RAW264.7 cell using several RNA extraction kits of different companies. The extracted RNA was loaded on a 1% formaldehyde gel.
Lane M : 0.5 ~ 10 kb RNA ladder
Lane 1 : Total RNA from supplier A
Lane 2 : Total RNA from supplier B
Lane 3 : Total RNA from Ribospin™



Total RNA was extracted from CHO (chinese hamster ovary) cell using several RNA extraction kits of different companies. The extracted RNA was loaded on a 1% formaldehyde gel.
Lane M : 0.5 ~ 10 kb RNA ladder
Lane 1 : Total RNA from supplier A
Lane 2 : Total RNA from supplier B
Lane 3 : Total RNA from Ribospin™

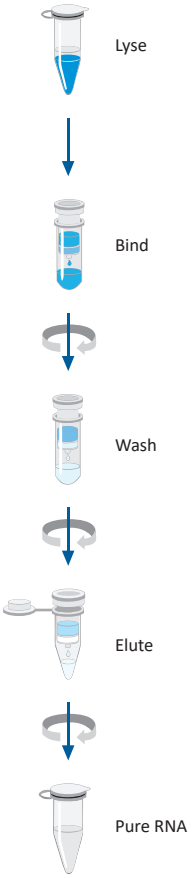


Total RNA was extracted from RAW264.7 cell using Ribospin™ and supplier kits. And then the cDNA was synthesized by reverse transcriptase. The cDNA was amplified by PCR and confirmed by electrophoresis.
Lane M : Lambda-HindIII
Lane 1 : PCR of cDNA from supplier A
Lane 2 : PCR of cDNA from supplier B
Lane 3 : PCR of cDNA from Ribospin™



Total RNA was extracted from liver tissue of rat using Ribospin™ and supplier kits. And then the cDNA was synthesized by reverse transcriptase. The cDNA was amplified by PCR and confirmed by electrophoresis.
Lane M : Lambda-HindIII
Lane 1 : PCR of cDNA from supplier A
Lane 2 : PCR of cDNA from supplier B
Lane 3 : PCR of cDNA from Ribospin™

Procedures



Component list

Column Type F (with collection tube)
1.5 ml microcentrifuge tube
Buffer LYS
Buffer GW1
Buffer RNW
Nuclease-free water
Protocol Handbook

Ribospin™ II

For total RNA isolation from animal tissues and cultured cells

Description

Ribospin™ II is devised to purify RNA from cultured cells or animal tissues (~ 1 x 10^7 cells or ~ 30 mg tissue). With the GeneAll's glassfiber membrane technology, highly pure RNA can be conveniently isolated in less than 30 minutes instead of the time consuming and hazardous conventional methods which require alcohol precipitation or toxic chemicals such as phenol / chloroform. The optimized buffer system of Ribospin™ II maximizes the specific binding efficiency of RNA to the glassfiber membrane but minimizes the contamination of impurities by a series of optimized wash buffer. Also, the contaminated DNA residues can be easily eliminated during the preparation by on-column digestion using DNase I included in this kit. Pure RNA which finally prepared in Nuclease-free water can be applied to the most of downstream application which require the pure RNA, and this whole procedure can be completely performed at room temperature.

Features and Benefits

- Simple, safer process with non-organic reagents
- Upgraded lysis buffer system, excellent lysis power and minimized bubble formation
- Preparation time : ~ 30 minutes
- DNase I included for pure RNA
- Accurate and consistent yield

Ribospin™ II

Format : Column Type F
(with 2.0 ml collection tube)

Sample size : ~ 30 mg tissue or ~ 1 x 10^7 cells

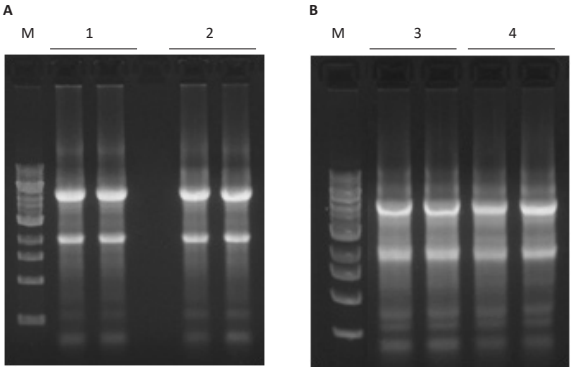
Max. loading volume : ~ 750 μℓ

Max. elution volume : ~ 30 μℓ

Max. binding capacity : ~ 500 μg

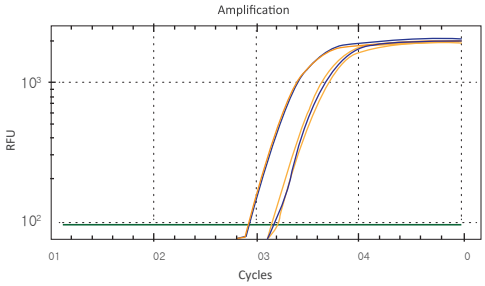
Cat. No.	Products	Type	Size
314-150	Ribospin™ II	Spin	50
314-103	Ribospin™ II	Spin	300

RNA Purification Experiments

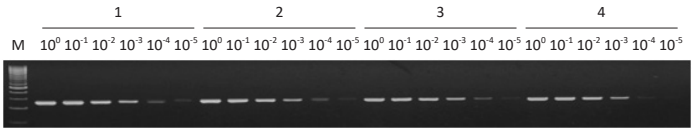


Total RNA was extracted from CHO (chinese hamster ovary-Panel A) cell and rat liver (10 mg / prep-Panel B) cell using Ribospin™ II and supplier A kit.
The extracted RNA was loaded on a 1% agarose gel.

Lane 1, 3 : Total RNA from Ribospin™ II
Lane 2, 4 : Total RNA from Supplier A



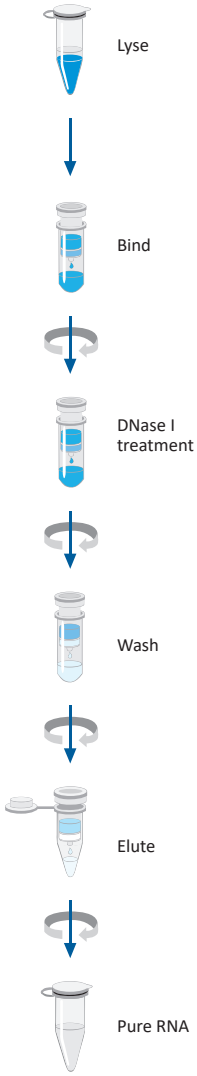
Total RNA was extracted from rat liver and brain with Ribospin™ II (Blue) and supplier A kit (Yellow). RT-qPCR was carried out with rat GAPDH primer sets using BIO-RAD CFX96 Touch™ Real-Time PCR Detection System.
cDNA synthesis is performed with HyperScript™ first strand synthesis kit and qPCR is performed with RealAmp™ qPCR Master mix kit.



Total RNA was extracted from heart tissue (rat) using Ribospin™ II and supplier A kit. And then the cDNA was synthesized by reverse transcriptase.
The cDNA was amplified by PCR and confirmed by electrophoresis.

Lane 1, 2 : PCR of cDNA from Ribospin™ II
Lane 3, 4 : PCR of cDNA from supplier A

Procedures



Component list

Column Type F (with collection tube)
1.5 ml microcentrifuge tube
Buffer RAL
Buffer RW
Buffer RSW
Buffer DRB
Nuclease-free water
DNase I
Protocol Handbook

Ribospin™ vRD (Plus)

For viral RNA / DNA isolation from various samples

Description

Ribospin™ vRD provides a convenient method for isolation of RNA and DNA from cell-free fluid, cell-culture supernatant, plasma, serum, swab, urine, and virus-infected samples. Ribospin™ vRD procedures employed the glassfiber membrane technology for the fastest and the most convenient of high purity RNA and DNA isolation, instead of conventional alcohol precipitation or phenol / chloroform extraction. Ribospin™ vRD buffer system provides the effective binding condition of RNA and DNA to glassfiber membrane through mix with lysis and binding buffers. And then the impurities on the membrane are washed away by two different wash buffers. At last, pure RNA and DNA are eluted by nuclease-free water. Whole procedure may take only 20 minutes and the eluate is suitable for PCR, RT-PCR or any downstream application without further manipulation.
Ribospin™ vRD Plus kit offers carrier RNA for purification of nucleic acid from very small amounts of sample.

Features and Benefits

- Glassfiber membrane technology
- Sample size : ~ 300 μℓ
- Preparation time : ~ 20 minutes
- Stable and consistent yield
- No phenol / chloroform extraction
- No ethanol precipitation
- Ready for use in PCR, RT-PCR, real-time PCR and other analytical procedures

Ribospin™ vRD (Plus)

Format : Column Type V
(with 2.0 ml collection tube)

Sample size : ~ 300 μℓ

Application volume : ~ 800 μℓ

Min. elution volume : ~ 30 μℓ

Binding capacity : ~ 100 μg

Cat. No.	Products	Type	Size
302-150	Ribospin™ vRD	Spin	50
312-150	Ribospin™ vRD Plus	Spin	50

Experimental Results

* Amplification test of HPIV (human parainfluenza virus) RNA

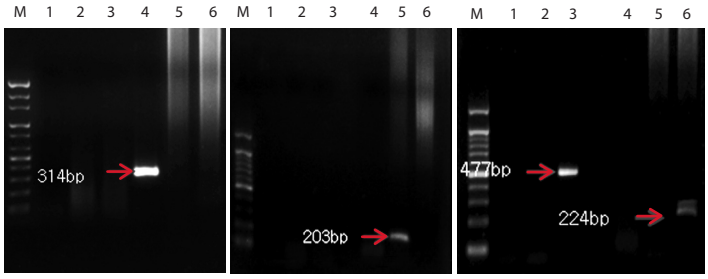


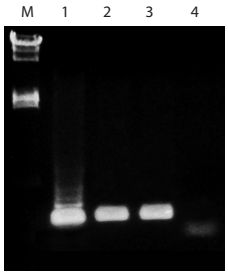
Fig I : PCR result using HPIV 1 specific primer

Fig II : PCR result using HPIV 2 specific primer

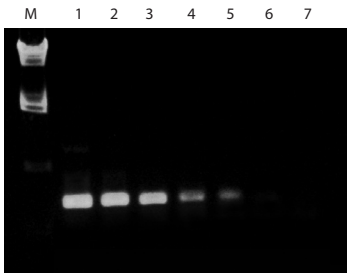
Fig III : PCR result using HPIV specific primer

Viral RNA was purified from HPIV (human parainfluenza virus) 1, 2, 3 infected samples using Ribospin™ vRD. And the cDNA was synthesized by reverse transcriptase. The cDNA was amplified by PCR and confirmed by electrophoresis.
Lane M : 100 bp ladder
Lane 1 ~ 3 : First PCR result
Lane 4 ~ 6 : Nest PCR result
Lane 1, 4 : HPIV 1
Lane 2, 5 : HPIV 2
Lane 3, 6 : HPIV 3

* Amplification test of HSV-1 (Herpes simplex virus) DNA

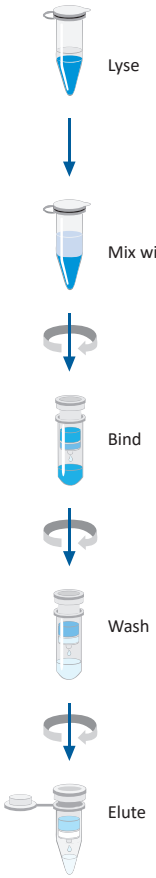


Total nucleic acid was extracted from cells infected by HSV-1 (DNA virus) and HSV-1 samples using Ribospin™ vRD. The DNA of HSV-1 was amplified by PCR and confirmed by electrophoresis.
Lane M : Lambda-HindIII
Lane 1 : PCR of DNA from infected cell
Lane 2, 3 : PCR of DNA from HSV-1 sample
Lane 4 : Negative control



Total DNA was extracted from gradually diluted HSV-1 sample using Ribospin™ vRD. And then the DNA of HSV-1 was amplified by PCR and confirmed by electrophoresis.
Lane M : Lambda-HindIII
Lane 1 : PCR of DNA extracted from 6 x 10^4 pfu HSV-1
Lane 2 : PCR of DNA extracted from 6 x 10^3 pfu HSV-1
Lane 3 : PCR of DNA extracted from 6 x 10^2 pfu HSV-1
Lane 4 : PCR of DNA extracted from 6 x 10 pfu HSV-1
Lane 5 : PCR of DNA extracted from 6 pfu HSV-1
Lane 6 : Negative control of a purification procedure
Lane 7 : Negative control

Procedures



Viral RNA / DNA

Component list
Column Type V (with collection tube)
1.5 ml microcentrifuge tube
Buffer VL
Buffer RB1
Buffer RBW
Buffer RNW
Carrier RNA (Plus only)
Nuclease-free water
Protocol Handbook

Ribospin™ vRD II

For viral RNA / DNA isolation from various samples

Description

Ribospin™ vRD II provides a convenient method for isolation of RNA and DNA from cell-free fluid, cell-cultrue supernatant, plasma, serum, swab, urine, and virus-infected samples. Ribospin™ vRD II procedures employed the glassfiber membrane technology for the fastest and the most convenient of high purity RNA and DNA isolation, instead of conventional alcohol precipitation or phenol / chloroform extraction. Ribospin™ vRD II buffer system provides the effective binding condition of RNA and DNA to glassfiber membrane and the impurities on the membrane are washed away by two different wash buffers. At last, pure RNA and DNA are eluted by nuclease-free water. Whole procedure takes only 15 minutes and the purified nucleic acid is suitable for PCR, RT-PCR, or any downstream application without further manipulation.

Features and Benefits

- Spin column format
- Stable and consistent yield
- Preparation time : ~ 15 minutes
- No phenol / chloroform extraction
- No ethanol precipitation
- Micro column & carrier RNA enhance the performance of viral sample extraction
- Various viral samples : cell-free fluid, cell-culture supernatant, plasma, serum, swab, urine and virus-infected samples
- Ready for use in PCR, RT-PCR, real-time PCR and other analytical procedures

Ribospin™ vRD II

Format : Column Type S (Micro),
(with 2.0 ml collection tube)

Sample size : ~ 100 μℓ

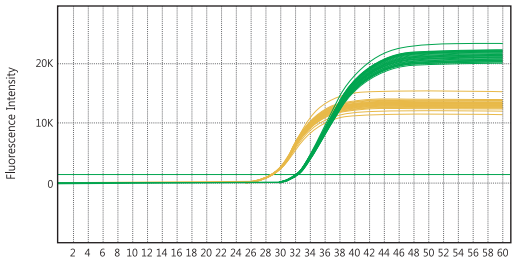
Preparation time : ~ 15 min

Max. loading volume : ~ 750 μℓ

Elution volume : 20 ~ 50 μℓ

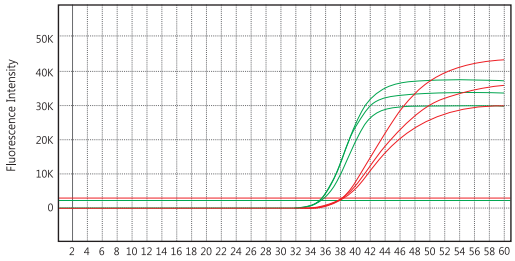
Cat. No.	Products	Type	Size
322-150	Ribospin™ vRD II	Spin	50
322-103	Ribospin™ vRD II	Spin	300

Stable and Reproducible Results



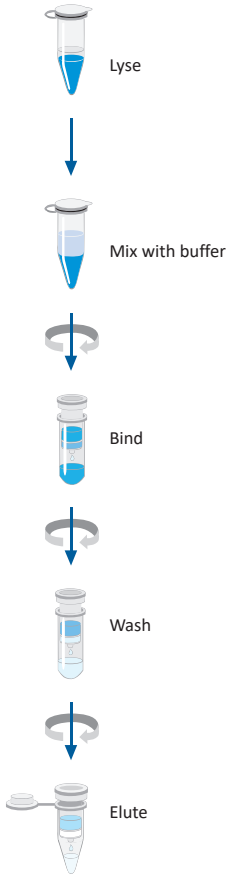
Consistency test of Ribospin™ vRD II.
HIV positive was diluted to 1000 IU / ml with human serum.
Extraction tests of HIV samples of 24 repeats were performed with Ribospin™ vRD II kit and the consistent result was confirmed by real-time PCR. Green is HIV signal and yellow is IC (internal control) signal.

Real-Time PCR Amplification



Results from different clinical human serum.
The extracted HIV (50 IU / ml, Red) and HBV (50 IU / ml, green) nucleic acids using Ribospin™ vRD II kit were amplified and detected by real-time PCR. Three repeat tests were performed for each sample.

Procedures



Viral RNA / DNA

Component list
Column Type S (with collection tube)
1.5 ml microcentrifuge tube
Buffer NVL
Buffer RB1
Buffer RBW
Buffer RNW
Carrier RNA
Nuclease-free water
Protocol Handbook

Ribospin™ Plant

For total RNA isolation from various plant samples

Description

Ribospin™ Plant is specially designed for purification of total RNA from various plant tissues such as leaves, stems, roots and picky plant samples. This kit provides the optimized buffer and spin column, which is effective in removing polysaccharides and polyphenolic compounds and isolating intact plant RNA. All components of Ribospin™ Plant are ready to use, so any further preparation for experiment is not required. The procedure of Ribospin™ Plant begins with the disruption of sample in liquid nitrogen using mortar and pestle. The disrupted sample can be lysed in Buffer RPL or REL. In most case, Buffer RPL is the best buffer for lysis. However in some plant samples, solidification of lysate can be occurred with Buffer RPL due to endosperm of seed or peculiar metabolites and this can be avoided by using Buffer REL as alternative for Buffer RPL. Most impurities except RNA in the lysate are eliminated by filtration through EzPure™ Filter and then the passed-through lysate is mixed with ethanol to adjust binding condition. Total RNA including a little impurity is bound to the membrane of Column Type W while the mixture is passing through. Survived genomic DNA can be exterminated by on-column DNase I treatment at this step. After a series of washing step using Buffer RBW and RNW, plant total RNA is eluted by Nuclease-free water. Whole procedure of Ribospin™ Plant takes only 25 minutes. The purified RNA is suitable for cDNA synthesis, RT-PCR, northern blotting and other analytical procedure.

Features and Benefits

- Glassfiber membrane technology
- Including DNase I and treatment step
- High purity : A_{260} / A_{280} = 1.8 ~ 2.2, A_{260} / A_{230} > 2.0
- Preparation time : ~ 25 minutes
- No phenol / chloroform extraction
- No ethanol precipitation
- Ready for use in RT-PCR, northern blotting, dot blotting, *in vitro* translation, molecular cloning, real-time PCR, RNase protection assay and other analytical procedures

Ribospin™ Plant

Format : Column Type W (with 2.0 ml collection tube),
EzPure™ Filter (with 2.0 ml collection tube)

Sample size : ~ 100 mg plant tissue

Max. loading volume of EzPure™ Filter : ~ 600 μℓ

Max. loading volume of spin column : ~ 700 μℓ

Min. elution volume : ~ 30 μℓ

Binding capacity : ~ 100 μg

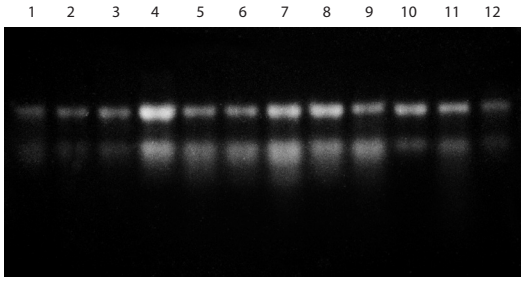
Cat. No.	Products	Type	Size
307-150	Ribospin™ Plant	Spin	50

Total RNA Yield from Various Starting Materials Using Ribospin™ Plant.

Materials	Sample type	Amount	Typical yields
Leaf	*Pinus densiflora* (Pine)	100 mg	2.7 μg
	Cucumis sativus L. (Cucumber)	100 mg	50 μg
	Zea mays (Corn)	100 mg	11 μg
	Capsicum annuum (Red pepper)	100 mg	22 μg
	Lycopersicum esculentum (Tomato)	50 mg	13 μg
	Lactuca sativa (Lettuce)	100 mg	29 μg
	Citrus grandis Osbek (Satsuma)	100 mg	4.6 μg
	Diospyros kaki (Persimmon)	100 mg	16 μg
	Crassula ovata (Crassula)	100 mg	3 μg
	Nicotiana tabacum (Tobacco)	50 mg	13 μg
Root	*Allium cepa* (Onion)	100 mg	8 μg
	Plantago asiatica (Plantain)	50 mg	2.5 μg
	Nicotiana tabacum (Tobacco)	50 mg	5.3 μg
Fruit	*Citrus grandis Osbek* (Satsuma)	50 mg	1.1 μg
Germ bud	*Allium cepa* (Onion)	100 mg	9 μg

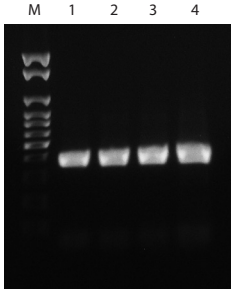
* The yield of total RNA may vary depending on the tissue or cells from which it is obtained.

RNA Purification Results



Total RNA was extracted from a wide variety of plant species using Ribospin™ Plant. The extracted RNA was loaded on a 1% formaldehyde gel.

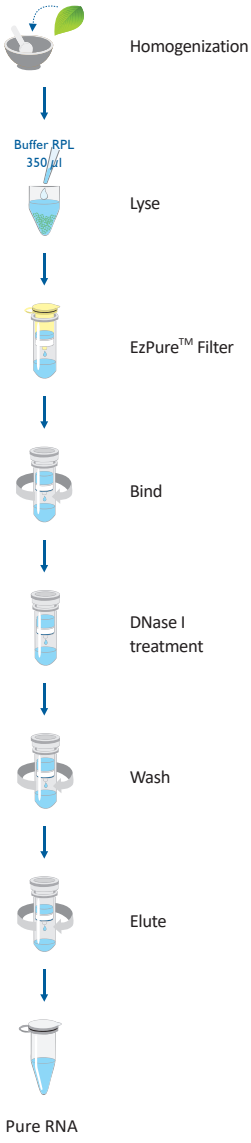
Lane 1 : Leaf RNA from *Pinus densiflora*
Lane 2 : Leaf RNA from *Crassula ovata*
Lane 3 : Leaf RNA from *Citrus grandis Osbek*
Lane 4 : Leaf RNA from *Diospyros kaki*
Lane 5 : Leaf RNA from *Zea mays*
Lane 6 : Leaf RNA from *Lycopersicum esculentum*
Lane 7 : Leaf RNA from *Nicotiana tabacum*
Lane 8 : Leaf RNA from *Lactuca sativa*
Lane 9 : Leaf RNA from *Cucumis satvus L*
Lane 10 : Root RNA from *Plantago asiatica*
Lane 11 : Root RNA from *Nicotiana tabacum*
Lane 12 : Fruit RNA from *Citrus grandis Osbek*



Total RNA was purified from Pinus densiflora by Ribospin™ Plant.
And the cDNA was synthesized by reverse transcriptase.
The cDNA was amplified by PCR and confirmed on a 1% agarose gel.

Lane 1 : cDNA 1 μℓ
Lane 2 : cDNA 2 μℓ
Lane 3 : cDNA 3 μℓ
Lane 4 : cDNA 4 μℓ

Procedures



Component list

Column Type W (blue ring),
(with collection tube)
EzPure™ Filter (yellow),
(with collection tube)
1.5 ml microcentrifuge tube
DNase I
Buffer RPL
Buffer REL
Buffer RBW
Buffer RNW
Buffer DRB
Nuclease-free water
Protocol Handbook

Ribospin™ Seed / Fruit

For total RNA isolation from various seed and fruit samples

Description

Ribospin™ Seed / Fruit kit is designed for easy and convenient isolation of total RNA from difficult plant tissues such as seeds, fruits, and rhizomes. Especially, this kit can remove effectively large quantities of secondary metabolites including polysaccharides and polyphenolic compounds which can lead to inhibition of downstream application. Ribospin™ Seed / Fruit kit provides two different procedures that are available for application of various plant tissues as follows : Protocol I for seed and fruit, Protocol II for starch-enriched grain and rhizome. For efficient RNA purification, this kit offers optimized lysis system according to the sample type and adopts EzPure™ Filter to eliminate impurities simply from lysate. Moreover, contamination of genomic DNA, that causes interference in RNA analysis, can be excluded by on-column DNase I treatment in these procedures. The purified RNA is suitable for use in various downstream procedures including cDNA synthesis, RT-PCR, or northern blotting.

Features and Benefits

- Glassfiber membrane technology
- Simply Removal of the impurities by using EzPure™ Filter
- Including DNase I and treatment step
- High purity : A_{260} / A_{280} = 1.8 ~ 2.2, A_{260} / A_{230} > 2.0
- Preparation time : ~ 30 minutes
- No phenol / chloroform extraction
- No ethanol precipitation
- Ready for use in RT-PCR, northern blotting, dot blotting, *in vitro* translation, molecular cloning, real-time PCR, RNase protection assay and other analytical procedures

Ribospin™ Seed / Fruit

Format : Column Type F (with 2.0 ml collection tube),
EzPure™ Filter (with 2.0 ml collection tube)

Sample size : ~ 100 mg Seed / Fruit

Max. loading volume of EzPure™ Filter : ~ 600 μℓ

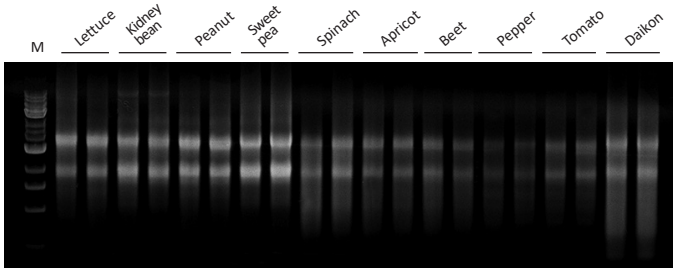
Max. loading volume of spin column : ~ 750 μℓ

Min. elution volume : 30 μℓ

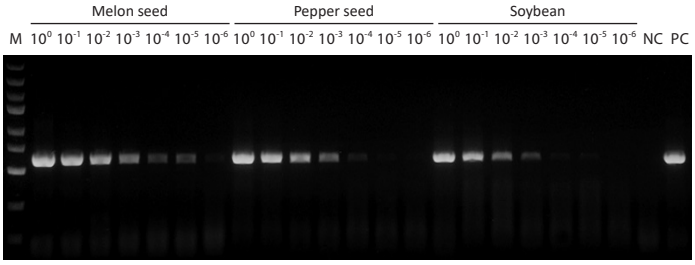
Preparation time : ~ 30 min

Cat. No.	Products	Type	Size
317-150	Ribospin™ Seed / Fruit	Spin	50

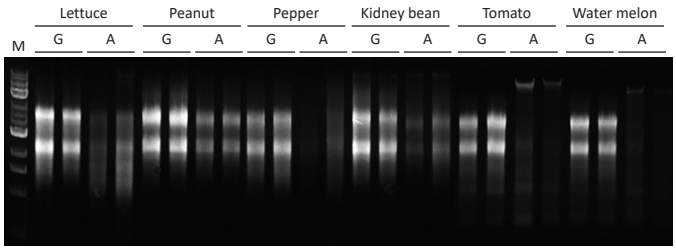
RNA Purification Results



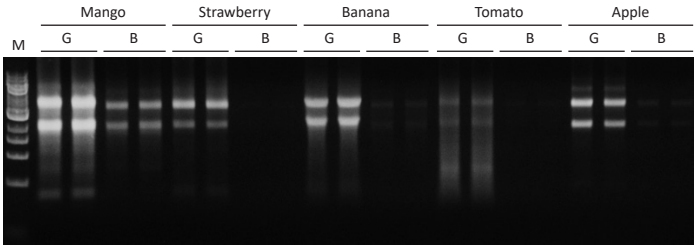
Total RNA was extracted from several kinds of seeds using Ribospin™ Seed / Fruit RNA kit. The extracted RNA was confirmed by electrophoresis.



RT-PCR was applied for CGMMV detection from infected seeds. The template RNA was isolated by Ribospin™ Seed / Fruit RNA kit and one-step RT PCR was adopted for RNA virus detection. The sensitivity of PCR was identified by serial diluted template detecting more than 10^{-4} dilution factor.
The PCR product was confirmed by electrophoresis.
Lane M : 250 bp ladder
Lane NC : Negative control
Lane PC : Positive control

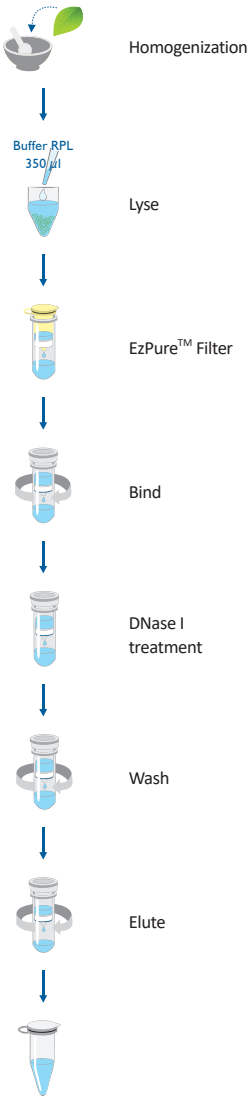


Total RNA was isolated from five different kinds of seeds using Ribospin™ Seed / Fruit RNA kit and supplier A kit. The extracted RNA was confirmed by electrophoresis.
Lane M : 250 bp ladder



Total RNA was isolated from five kinds of fruits using Ribospin™ Seed / Fruit RNA kit and supplier B kit. The extracted RNA was confirmed by electrophoresis.
Lane M : 250 bp ladder

Procedures



Component list

Column Type F (with collection tube)
EzPure™ Filter (with collection tube)
1.5 ml microcentrifuge tube
DNase I
Buffer SL
Buffer ML
Buffer RBW
Buffer RNW
Buffer DRB
Nuclease-free water
Protocol Handbook

Riboclear™ (Plus)

For RNA cleanup from various RNA samples

Description

Riboclear™ provides an easy and rapid method for RNA cleanup or concentration from various RNA samples in just 6 minutes. Riboclear™ eliminates alcohol precipitation by binding of RNA with column, allowing rapid and convenient preparation from various samples simultaneously. Purified RNA with Riboclear™ series are free of salts and enzymes in yields reaching 95% and are suitable for dot blotting, *in vitro* translation, cloning, RT-PCR, RNase protection assays and other analytical procedures. Riboclear™ Plus kit provides DNase I for removal of DNA and micro column for concentration of total RNA.

Features and Benefits

- Preparation time : ~ 6 minutes / ~ 17 minutes (Plus)
- Stable and consistent yield
- High recovery rate : ~ 95%
- No use of organic solvents
- No ethanol precipitation
- Complete removal of salts and enzymes
- Ready for use in RT-PCR, northern blotting, dot blotting, *in vitro* translation, molecular cloning, real-time PCR, RNase protection assays and other analytical procedures

Riboclear™

Format : Column Type F
(with 2.0 ml collection tube)

Sample size : 100 μℓ

Recovery Rate : ~ 95%

Preparation time : ~ 6 min

Application volume : ~ 750 μℓ

Min. elution volume : 30 μℓ

Binding capacity : ~ 500 μg

Riboclear™ Plus

Format : Column Type S (Micro),
(with 2.0 ml collection tube)

Sample size : 100 μℓ

Recovery Rate : ~ 95%

Preparation time : ~ 17 min
(included DNase I treatment processing)

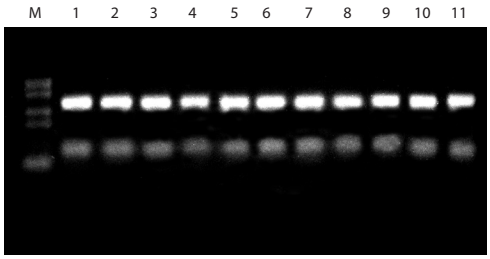
Application volume : ~ 800 μℓ

Min. elution volume : 20 μℓ

Binding capacity : ~ 100 μg

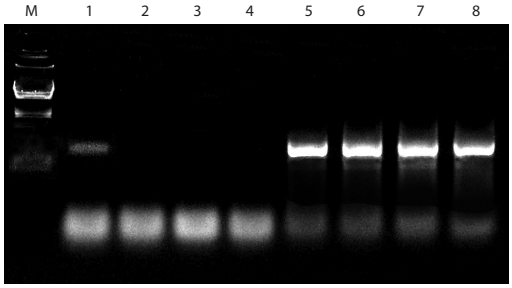
Cat. No.	Products	Type	Size
303-150	Riboclear™	Spin	50
313-150	Riboclear™ Plus	Spin	50

Reproducibility Test



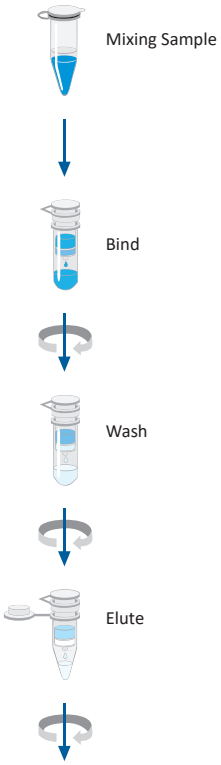
The consistency of the purified RNA using Riboclear™ was confirmed by electrophoresis.
Lane M : Lambda-HindIII
Lane 1 : Extracted Total RNA from Hybrid-R™
Lane 2 ~ 11 : The purified RNA from Riboclear™

Downstream Application Test



The purified RNA using Riboclear™ Plus. And the cDNA was synthesized by reverse transcriptase. The cDNA was amplified by PCR and confirmed by electrophoresis.
Lane M : Lambda-HindIII
Lane 1 : PCR analysis of RNA eluate undigested by DNase I
Lane 2 ~ 4 : PCR analysis of RNA eluate digested by DNase I
Lane 5 : PCR analysis of synthesized cDNA from RNA in Lane 1
Lane 6 ~ 8 : PCR analysis of synthesized cDNA from RNA in Lane 2 ~ 4

Procedures



Component list
Column Type F (with collection tube)
Column Type S (with collection tube), (Plus only)
1.5 ml microcentrifuge tube
Buffer MS
Buffer RNW
Buffer DRB (Plus only)
Nuclease-free water
DNase I (Plus only)
Protocol Handbook

Allspin™

For total RNA & DNA isolation from tissues and cultured cells

Description

Allspin™ total DNA / RNA purification kit provides a convenient method for the isolation of total DNA and total RNA simultaneously from a single sample of tissue or cultured cells. DNA and RNA are purified separately from a same sample by individual but successive procedure using column B and column W respectively. Whole procedure can be performed in just 30 minutes and the length of obtained DNA is up to 50 kb (average is 30 kb) and that of RNA is longer than 200 nucleotides.

Features and Benefits

- Glassfiber membrane technology
- Sample size : ~ 30 mg tissue or ~ 1 x 10^7 cultured cells
- Typical yield of RNA : ~ 20 μg / 1 x 10^6 cultured cells
  ~ 60 μg / 10 mg liver tissue
- Typical yield of DNA : ~ 10 μg / 1 x 10^6 cultured cells
  ~ 25 μg / 10 mg liver tissue
- High purity
- Preparation time : ~ 30 minutes
- Stable and consistent yield
- No phenol / chloroform extraction
- No ethanol precipitation
- Ready for use in RT-PCR, northern blotting, dot blotting, *in vitro* translation, molecular cloning, real-time PCR, RNase protection assays and other analytical procedures

Allspin™ Column Type B for DNA

Format : Column Type B (with 2.0 ml collection tube)

Color : Red ring

Sample size : ~ 30 mg tissue or ~ 1 x 10^7 cells

Application volume : ~ 700 μℓ

Min. elution volume : ~ 50 μℓ

Binding capacity : ~ 100 μg

Nucleic acid binding size : ~ 50 kb

Allspin™ Column Type W for RNA

Format : Column Type B (with 2.0 ml collection tube)

Color : Blue ring

Sample size : ~ 30 mg tissue or ~ 1 x 10^7 cells

Application volume : ~ 700 μℓ

Min. elution volume : ~ 30 μℓ

Binding capacity : ~ 100 μg

Nucleic acid binding size : > 200 nucleotides

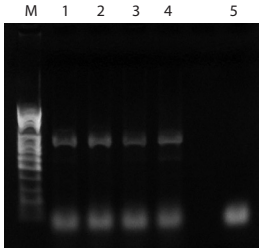
Cat. No.	Products	Type	Size
306-150	Allspin™	Spin	50

The Yield of Genomic DNA and Total RNA from Various Starting Materials Using Allspin™.

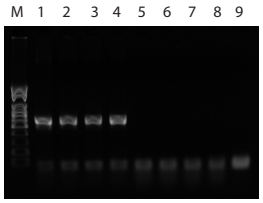
Materials	Sample type	Yield of genomic DNA	Yield of Total RNA
Cultured cell (≒ 1 x 10^6)	CHO	~ 7 μg	~ 15 μg
	RAW 264.7	~ 10 μg	~ 20 μg
Tissue (rat) (10 mg / prep)	Liver	~ 25 μg	~ 60 μg
	Kidney	~ 25 μg	~ 30 μg
	Brain	~ 12 μg	~ 10 μg
	Heart	~ 10 μg	~ 9 μg
	Spleen	~ 70 μg	~ 80 μg

* The yield of genomic DNA and total RNA may vary depending on the tissue or cells from which it is obtained.

Comparison Data



RT-PCR results from total RNA of rat heart tissue using Allspin™ and supplier A kit were analysed on a 1% agarose gel.
Lane M : 100 bp ladder
Lane 1, 2 : PCR of cDNA from Allspin™
Lane 3, 4 : PCR of cDNA from supplier A
Lane 5 : Negative control



PCR result from genomic DNA and total RNA eluate of CHO cells.
Lane M : 100 bp ladder
Lane 1, 2 : Genomic DNA eluate from Allspin™
Lane 3, 4 : Genomic DNA eluate from Supplier A
Lane 5, 6 : Total RNA eluate from Allspin™
Lane 7, 8 : Total RNA eluate from Supplier A
Lane 9 : Negative control

Fig. I

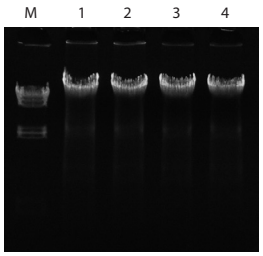
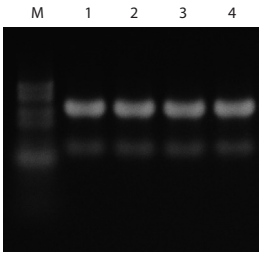


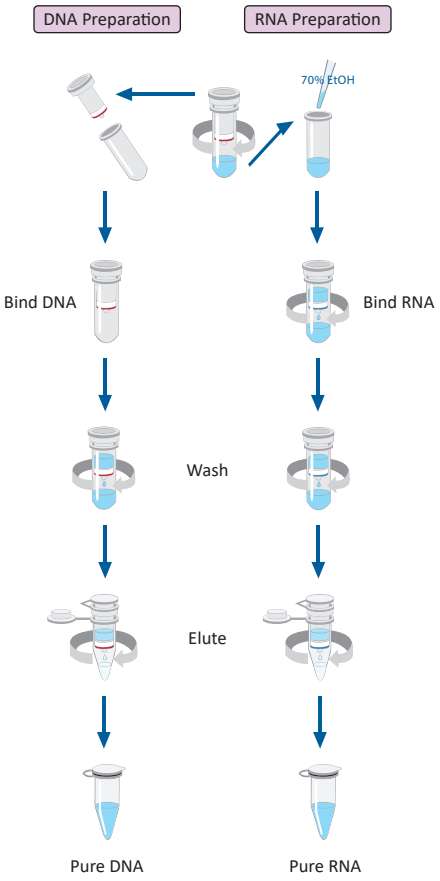
Fig. II



Genomic DNA and total RNA were purified from RAW264.7 cells using Allspin™ and supplier A kit.
Fig. I Genomic DNA were analysed on a 1% agarose gel
Lane M : Lambda-HindIII
Lane 1, 2 : Genomic DNA from Allspin™
Lane 3, 4 : Genomic DNA from Supplier A

Fig. II Total RNA were analysed on a 1% formaldehyde agarose gel
Lane M : 0.5 ~ 10 kb RNA ladder
Lane 1, 2 : Total RNA from Allspin™
Lane 3, 4 : Total RNA from Supplier A

Procedures



Component list

Column Type B (red ring),
(with collection tube)
Column Type W (blue ring),
(with collection tube)
Collection tube
1.5 ml microcentrifuge tube
Buffer CTL
Buffer GW1
Buffer BW
Buffer RNW
Buffer AE
Nuclease-free water
Protocol Handbook

RiboSaver™

For stabilization of RNA in harvested animal tissues and cultured cell

Description

RiboSaver™ is a preservation solution to stabilize cellular RNA in biological specimens such as tissues and cultured cells. The harvested samples submerged in RiboSaver™ can be easily stored or transported at ambient temperature without any cooling method such as liquid nitrogen or dry-ice. RNA isolation from the samples stabilized by RiboSaver™ is compatible with most conventional or commercial RNA extraction methods.

Features and Benefits

- Store both tissue and cells without risk of nucleic acid degradation
- Immediate stabilization and subsequent transport or storage
- Convenient and safe handling at room temperature
- No need for liquid nitrogen or dry ice
- Directly applicable to numerous RNA purification kits and another downstream applications

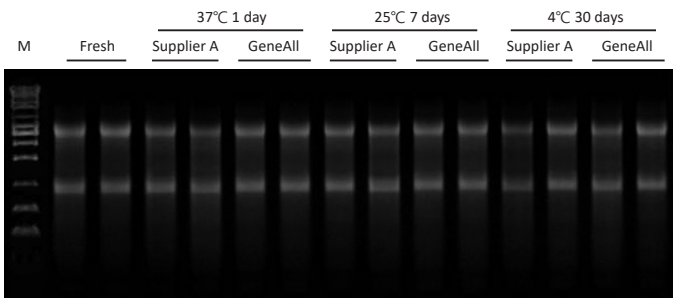
Storage temperature and period condition

Storage temperature	Storage period
37°C	1 day
18 ~ 25°C	7 days
4°C	30 days
-20°C and below	Several months

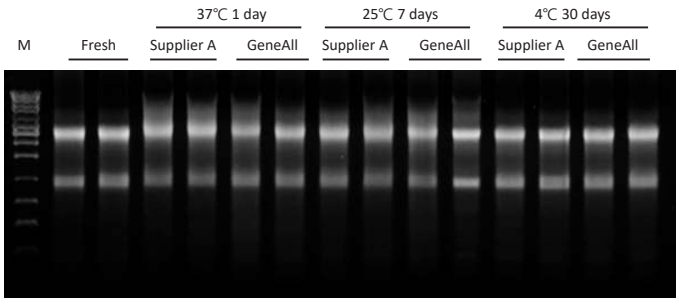
The RiboSaver™ solution stored at -20°C would not freeze but some precipitates may form. There is no need to re-dissolve the precipitates that not affect subsequent RNA isolation. In storage at -80°C, the whole solution including samples will be frozen. For RNA isolation, the solution needs to thaw completely at room temperature.

Cat. No.	Products	Type	Size
351-001	RiboSaver™	Solution	100

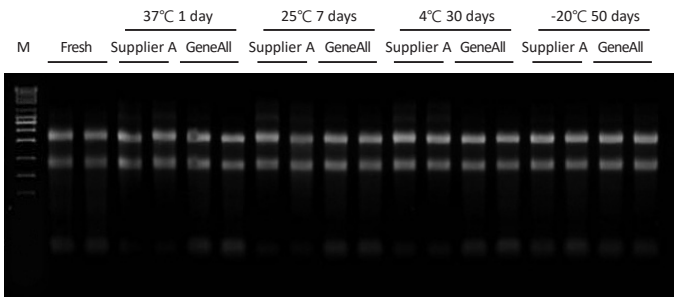
Results of Extracted Nucleic Acid from Stabilized Samples in RiboSaver™



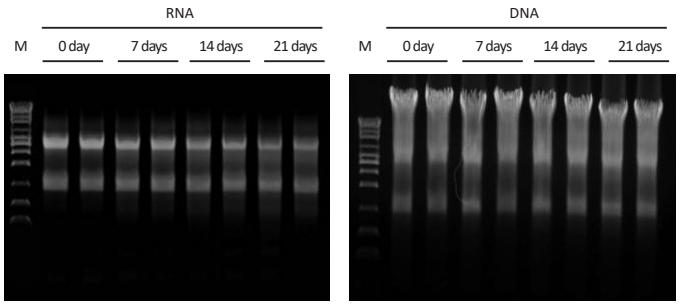
Total RNA was isolated from HeLa cells stored in RiboSaver™ or Supplier A as shown.



Total RNA was isolated from lung tissue (rat) stored in RiboSaver™ or Supplier A as shown.



Total RNA was isolated from *E. coli* (DH5α) stored in RiboSaver™ or Supplier A as shown.



To confirm the preservation of samples in RiboSaver™, total RNA and genomic DNA were isolated from Jurkat cells stored in RiboSaver™ at RT during various periods.

Procedures

Animal Tissue

Cut fresh tissue

↓

Add 5 ~ 10 volumes of RiboSaver™
(e.g. Add 0.5 ~ 1 ml of RiboSaver™ per 100 mg of tissue.)

Cultured cells

Resuspend cells in 50 μℓ of PBS or residual supernatant

↓

Add 5 ~ 10 volumes of RiboSaver™
(e.g. Add 250 ~ 500 μℓ of RiboSaver™ per 50 μℓ of cell suspension.)

Component list

RiboSaver™ RNA Stabilization solution
Protocol Handbook

GeneAll® STEADi™

For more information about products, visit www.geneall.com

05. Automated Nucleic Acid Purification System

STEADi™ System

Automated Nucleic Acid Purification System

Description

The STEADi™ system invented a new way of automated nucleic acid purification. STEADi™ can purify the pure nucleic acid from a wide range of starting materials using GeneAll® unique SCA technology. The GeneAll® SCA technology is a combined form of the spin column, filter adapter and column tip which they are essential components of silica membrane based purification. It is particullarly designed for completely prevent the cross-over contamination. After minutes of setup procedure, the integrated LCD touch panel interface allows the completion of operation very easily. The resulting nucleic acids are perfectly suitable for a broad range of downstream applications, including PCR, RT-PCR, qRT-PCR, sequencing, genotyping, gene expression related study and even molecular diagnostic process too.

Features and Benefits

- High yield and ultra pure nucleic acid
- Pre-filled reagent cartridge system for convenient setup
- Easy-to-use and easy-to-maintenance for the operating system
- Proven purification technology by using silica-based membrane of column format and independent movement for the prevention of cross contamination
- User friendly graphical interface
- Purification of nucleic acid from a wide range of starting materials for successful downstream application

STEADi™ Specification

Throughput capacity : 12 / 24
Heat block : RT-100°C x 1, RT-70°C x 1
Touch screen : WVGA (16:9) 7” TFT LCD
Processing time : 70 ~ 120 min
Sample volume : 100 ~ 600 μℓ
Elution volume : 50 ~ 200 μℓ
Operating condition : 15 ~ 30°C

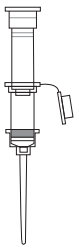
Cat. No.	Products	Type
GST012	STEADi™ 12	STEADi™ 12 DNA / RNA Purification Instrument System
GST024	STEADi™ 24	STEADi™ 24 DNA / RNA Purification Instrument System

1. Broad range of Applications

- Purification of genomic DNA and RNA from a wide variety of samples (cell, tissue, blood, seed and etc.)
- STEADi™ optimization kit according to the characteristics of the individual samples.

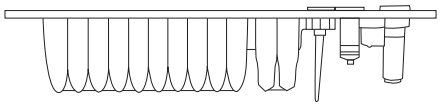
2. High yield and Purity

- Sample can be easily passed through the silica membrane with reverse way by the help of SCA technology and release the high yield and pure nucleic acid suitable for a broad range of downstream applications.



3. Simple Procedure

- Cartridge type of reagents enables hand-off operation.



4. User friendly Graphical Interface

- Three touch steps of LCD interface allow the completion of operation through pre-programmed software.
- Real-time monitoring of experiment is possible through the running clock on the screen.

For more information about STEADi™, please contact.
Web : www.geneall.com
E-mail : geneall@geneall.com

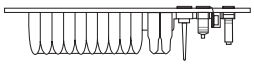
STEADi™ Genomic DNA Cell / Tissue

For automatic purification of total DNA from various sample species

Description

GeneAll® STEADi™ Genomic DNA Cell / Tissue kit provides fast and easy methods for automatic purification of total DNA from various sample species, such as cultured cells, tissues, swabs, etc. in GeneAll® STEADi™ system. All components required for the preparation of DNA are integrated in a single cartridge allowing the whole process to be performed automatically with minimum pre-treatment processing. The entire procedure of GeneAll® STEADi™ Genomic DNA Cell / Tissue kit takes 120 minutes and the purified DNA can be used directly for various downstream applications such as PCR, qPCR, enzymatic reaction and blotting.

STEADi™ Genomic DNA Cell / Tissue



Format : Cartridges

Sample size : ~ 5 x 10^6 cells or ~ 20 mg tissue

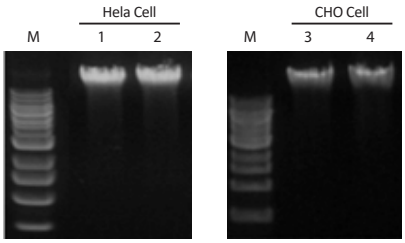
Preparation time : 120 min

Throughput capacity : 12 or 24 preps

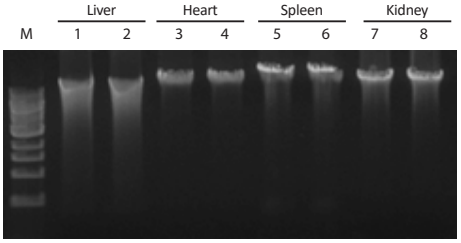
Max. recovery yield : ~ 100 μg

Nucleic acid binding size : 200 nucleotides ~ 30 kb

DNA Extraction Efficiency



Genomic DNA isolated from several kind of mammalian cell using the STEADi™ Genomic DNA Cell / Tissue Kit.
M : 1 kb ladder



Genomic DNA isolated from several kinds of animal tissues (Rat) using the SEADi™ Genomic DNA Cell / Tissue Kit.
M : 1 kb ladder

Cat. No.	Products	Type	Size
401-104	STEADi™ Genomic DNA Cell / Tissue	Cartridges set	96

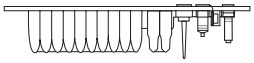
STEADi™ Genomic DNA Blood

For automatic purification of total DNA from blood and its derivatives

Description

GeneAll® STEADi™ Genomic DNA Blood kit provides fast and easy method for automatic purification of total DNA from fresh whole blood, frozen blood, body fluid, and various liquid samples in GeneAll® STEADi™ system. All components required for the preparation of DNA are integrated in a single cartridge allowing the whole process to be performed automatically with minimum pre-treatment processing. The entire procedure of GeneAll® STEADi™ Genomic DNA Blood kit takes 120 minutes and the purified DNA can be used directly for various downstream applications such as PCR, qPCR, enzymatic reaction and blotting.

STEADi™ Genomic DNA Blood



Format : Cartridges

Sample size : ~ 300 μℓ Blood

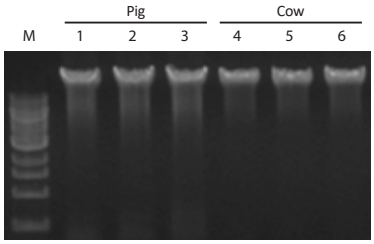
Preparation time : 120 min

Throughput capacity : 12 or 24 preps

Max. recovery yield : ~ 100 μg

Nucleic acid binding size : 200 nucleotides ~ 30 kb

DNA Extraction Efficiency



Genomic DNA isolated from whole blood of animals using the Genomic DNA Blood Kit.
M : 1 kb ladder

Cat. No.	Products	Type	Size
402-105	STEADi™ Genomic DNA Blood	Cartridges set	96

STEADi™ Genomic DNA Plant

For automatic purification of genomic DNA from various plant tissue samples

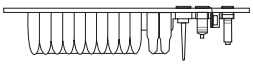
Description

GeneAll® STEADi™ Genomic DNA Plant kit is designed to extract genomic DNA from various plant samples on STEADi™ system. And all components required for the extraction of genomic DNA are integrated on a single cartridge, so whole process can be performed automatically with minimum pre-treatment step.

The buffers of this kit have been specially formulated to maximize the recovery of intact genomic DNA. Especially when purifying DNA from plant, the removal of secondary metabolites is very important because the contamination of these impurities can lead to inhibition of downstream application. The optimized pre-treatment process adopted in this kit can facilitate the removal of contaminants, such as polysaccharides, polyphenol or polyphenolic compounds, proteins, carbohydrates, lipids and other impurities. Polysaccharides are even released with the nucleic acid through the lysis process. Accordingly, the incubation time is very important to completely remove the secondary metabolites. Failure to observe the incubation time specified in the handbook may lead to clogging of the column and reduce the yield and quality of the extracted DNA.

The purified DNA can be applied to PCR, enzymatic reaction and other downstream applications.

STEADi™ Genomic DNA Plant



Format : Cartridges

Sample size : ~ 100 mg plant tissue

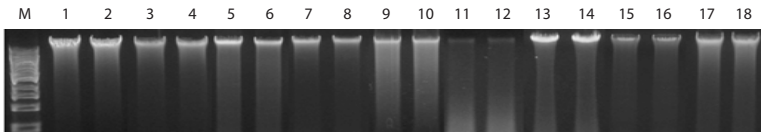
Preparation time : 85 min

Throughput capacity : 12 or 24 preps

Max. recovery yield : ~ 50 μg

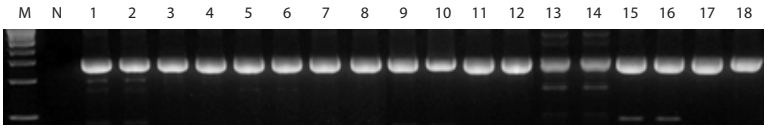
Nucleic acid binding size : 200 nucleotides ~ 30 kbp

DNA Extraction Efficiency



Total DNA prepared from various plant leaves using STEADi™ Genomic DNA Plant Kit.

Lane M : 1 kb ladder
Lane 1, 2 : Pine
Lane 3, 4 : Gingko
Lane 5, 6 : Diospyros
Lane 7, 8 : Cayenne
Lane 9, 10 : Tobacco
Lane 11, 12 : Bamboo
Lane 13, 14 : Barely
Lane 15, 16 : Zelkova
Lane 17, 18 : Apple



PCR was performed with total DNA purified from various sample using STEADi™ Genomic DNA Plant as template. The primer set is for a 724 bp fragment of highly conserved region of chloroplast DNA.

Lane M : 1 kb ladder
Lane 1, 2 : Pine
Lane 3, 4 : Gingko
Lane 5, 6 : Diospyros
Lane 7, 8 : Cayenne
Lane 9, 10 : Tobacco
Lane 11, 12 : Bamboo
Lane 13, 14 : Barely
Lane 15, 16 : Zelkova
Lane 17, 18 : Apple

Cat. No.	Products	Type	Size
407-117	STEADi™ Genomic DNA Plant	Cartridges set	96

STEADi™ Soil DNA

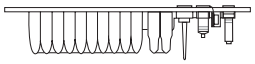
For automatic purification of total DNA from soil samples

Description

GeneAll® STEADi™ Soil DNA kit is designed to extract DNA from the various kinds of soil samples on STEADi™ system. And All components required for extraction of genomic DNA are integrated on a single cartridge, so whole process can be performed automatically with minimum pre-treatment step. Bacteria in a soil sample can be effectively disrupted by the PowerBead™ included in this kit. Then, bacterial genomic DNA in the lysate can be purified on an automated STEADi system using a SCA cartridge containing the optimized buffer solutions.

Most of soil samples contain the humic acids which are known as strong PCR inhibitor. Successful downstream applications very rely on the complete removal of humic acids from the sample. GeneAll® STEADi™ Soil DNA kit realized ideal purification system for the complete removal of humic acids and consequently purified DNA from soil samples can be used for various downstream applications.

STEADi™ Soil DNA



Format : Cartridges

Sample size : ~ 500 mg soil

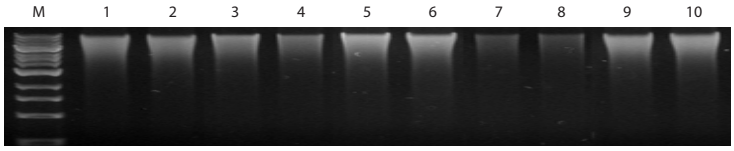
Preparation time : 70 min

Throughput capacity : 12 or 24 preps

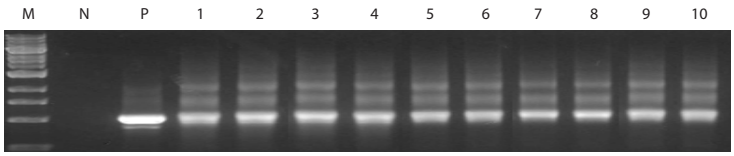
Max. recovery yield : ~ 100 μg

Nucleic acid binding size : 200 nucleotides ~ 30 kbp

DNA Extraction Efficiency



Genomic DNA isolated from a variety of soil samples using the STEADi™ Soil DNA Kit.
Lane M : 1 kb ladder
Lane 1, 2 : Soil of root patch
Lane 3, 4 : Mud
Lane 5, 6 : Soil under leaves
Lane 7, 8 : Dried soil
Lane 9, 10 : Pot soil



Genomic DNA was purified from various soil sample using the STEADi™ Soil DNA Kit. And then, the 16S rRNA was amplified by PCR and confirmed by electrophoresis.
Lane M : 1 kb ladder
Lane N : Negative control
Lane P : Positive control
Lane 1, 2 : Soil of root patch
Lane 3, 4 : Mud
Lane 5, 6 : Soil under leaves
Lane 7, 8 : Dried soil
Lane 9, 10 : Pot soil

Cat. No.	Products	Type	Size
408-114	STEADi™ Soil DNA	Cartridges set	96

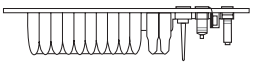
STEADi™ Total RNA

For automatic purification of total RNA from various sample species

Description

GeneAll® STEADi™ Total RNA kit provides fast and easy methods for automatic purification of total RNA from various sample species, such as cultured cells, tissues, etc. in GeneAll® STEADi™ system. The yield and the quality of purified RNA can vary depending on the type and the storage condition of the sample. Freshly harvested samples usually lead to good results. Samples should always be placed on ice as quickly as possible. Repeated freezing and thawing of the sample should be avoided for a good result. All components required for the preparation of RNA are integrated on a single cartridge allowing the whole process to be performed automatically with minimum pre-treatment processing. The entire procedure of GeneAll® STEADi™ Total RNA kit takes 90 minutes and the purified RNA can be used directly for various downstream applications such as cDNA synthesis, RT-PCR, qPCR and blotting.

STEADi™ Total RNA



Format : Cartridges

Sample size : ~ 5 x 10^6 cells or ~ 25 mg tissue

Preparation time : 90 min

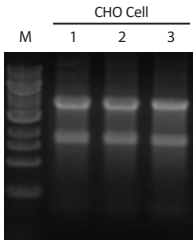
Throughput capacity : 12 or 24 preps

Max. recovery yield : ~ 100 μg

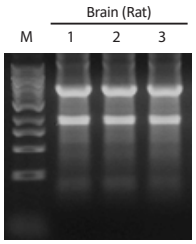
Nucleic acid binding size : 200 nucleotides ~ 30 kb

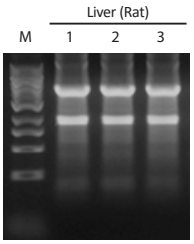
RNA Extraction Efficiency

Cell



Tissue





Total RNA isolated from animal cell and tissue using the STEADi™ Total RNA kits.
M : 1 kb ladder

Cat. No.	Products	Type	Size
404-304	STEADi™ Total RNA	Cartridges set	96

STEADi™ Viral DNA / RNA

For automatic purification of viral DNA and RNA from various liquid samples

Description

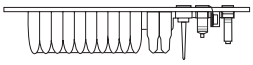
GeneAll® STEADi™ Viral DNA / RNA kit provides fast and easy method for automatic purification of viral DNA and RNA from various liquid samples, such as cell-free fluid, cell-culture supernatant, plasma, serum, urine, and virus infected liquid samples, etc. in GeneAll® STEADi™ system.

This kit provides Carrier RNA which can add at lysis step if required. Provided Carrier RNA can help to improve the binding capacity of mini spin column when viral nucleic acids included in sample are low-copy and protect target nucleic acids from the chance of degradation due to residual RNase activity.

The yield and the quality of purified nucleic acids can vary depending on the type and the storage condition of the sample. Starting material, such as plasma or media, should be stored at -70°C as conveniently sized aliquots for long-term storage.

All components required for the preparation of nucleic acids are integrated in a single cartridge allowing the whole process to be performed automatically with minimum pre-treatment processing. The entire procedure of GeneAll® STEADi™ Viral DNA / RNA kit takes 85 minutes and the purified nucleic acids can be used directly for various downstream applications such as PCR, qPCR, enzymatic reaction and blotting.

STEADi™ Viral DNA / RNA



Format : Cartridges

Sample size : ~ 100 μℓ

Preparation time : 85 min

Throughput capacity : 12 or 24 preps

Max. recovery yield : ~ 100 μg

Nucleic acid binding size : 200 nucleotides ~ 30 kbp

Cat. No.	Products	Type	Size
405-322	STEADi™ Viral DNA / RNA	Cartridges set	96

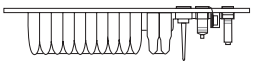
STEADi™ CFC Seed DNA / RNA

For automatic purification of total nucleic acid including total DNA / RNA or viral DNA / RNA from various seed samples

Description

GeneAll® STEADi™ CFC Seed DNA / RNA kit is specially designed for the automatic purification of total nucleic acid including viral DNA / RNA from various seed samples, such as beans, peas, and nuts, etc. in GeneAll® STEADi™ system.
All components required for the preparation of nucleic acids are integrated in a single cartridge allowing the whole process to be performed automatically with minimum pre-treatment processing. The pre-treatment with Buffer SQ1 and SQ2 is specially optimized for extraction of nucleic acid from seeds. The buffers can remove effectively secondary metabolites including polysaccharides and polyphenolic compounds which can lead to inhibition of PCR or other enzymatic reactions. Also the buffer system enables the lysate to be suitable for automatic purification of nucleic acid.
The entire procedure of GeneAll® STEADi™ CFC Seed DNA / RNA kit takes 90 minutes and the purified DNA and RNA can be used directly for various downstream applications such as PCR, qPCR, enzymatic reaction and blotting.

STEADi™ CFC Seed DNA / RNA



Format : Cartridges

Sample size : ~ 2 g

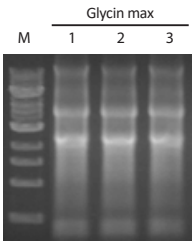
Preparation time : 90 min

Throughput capacity : 12 or 24 preps

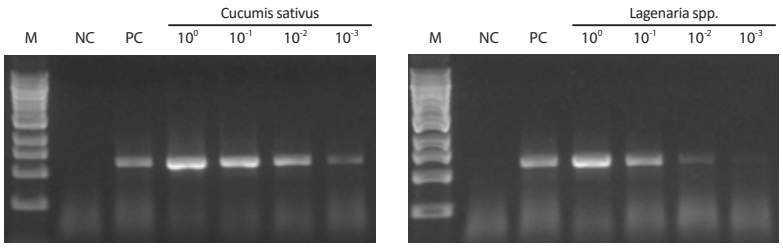
Max. recovery yield : ~ 100 μg

Nucleic acid binding size : 200 nucleotides ~ 30 kb

Total Nucleic Acids Extraction Efficiency



Total Nucleic acids isolated from Soya bean using the STEADi™ CFC Seed DNA / RNA Kit.
M : 1 kb ladder



To detect, STEADi™ CFC Seed DNA / RNA Kit was used for the extraction of total nucleic acids from virus infected seeds.
The serially diluted eluate was used as RT-PCR template from 10^0 to 10^{-3}.
RT-PCR performed using HyperScript™ One-step RT-PCR master mix (GeneAll®).
M : 1 kb ladder PC : Positive control NC : Negative control

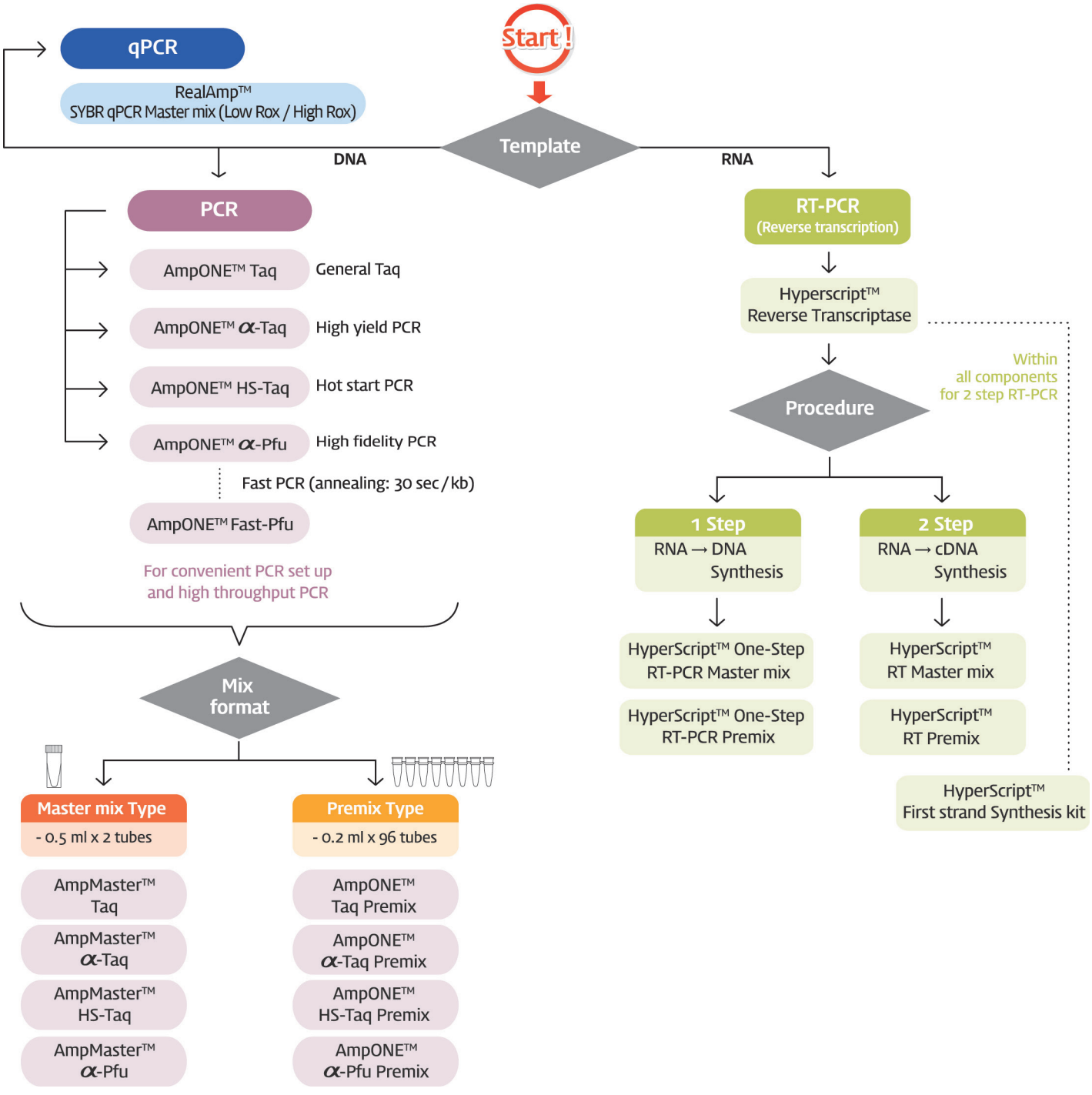
Cat. No.	Products	Type	Size
406-C02	STEADi™ CFC Seed DNA / RNA	Cartridges set	96

Typical Yields of Seed Samples Using STEADi™ CFC Seed DNA / RNA

Sample type	Sample weight	Average yield of total nucleic acid
Phaseolus vulgaris	2 g	~ 120 μg
Capsella bursa-pastoris	0.5 g	~ 0.2 μg
Ulmus spp.	0.5 g	~ 0.35 μg
Glycin max	2 g	~ 100 μg
Vigna sinensis	2 g	~ 163 μg
Arachis hypogaea	1 g	~ 22 μg
Cucumis sativus	1 g	~ 11 μg

Selection Guide

For PCR / RT-PCR Amplificaiion System



06. PCR / qPCR Amplification System

BB Solution

BB solution

6X BB solution is newly developed gel loading buffer. And it's designed for easy loading and tracking of nucleic acids in agarose gels. In order to see PCR product or purified nucleic acids, it can be used as a loading dye. Even though PCR proceeds with BB solution, PCR works successfully and BB solution doesn't effect on the results. Furthermore PCR mixture can be loading directly without additional dye on agarose gels as PCR premix products.

Gel loading dye

final conc. : 1X BB solution

example

6X BB solution	1 μℓ
PCR product or DNA prep sample	5 μℓ

PCR mix

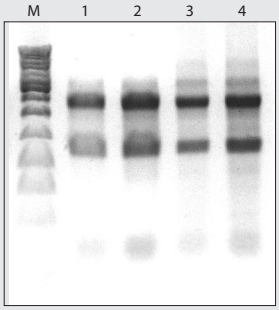
final conc. : 0.5X BB solution

example

PCR reaction vol.	30 μℓ
6X BB solution	2.5 μℓ

PCR mixture (final conc. 0.5x)

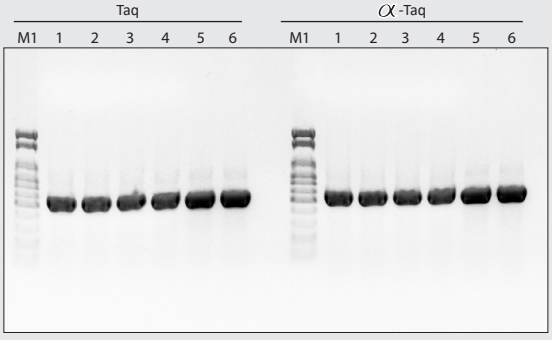
final vol.	20 μℓ	30 μℓ	40 μℓ	50 μℓ	50 μℓ	100 μℓ
6x BB	1.6 μℓ	2.5 μℓ	3.3 μℓ	4.1 μℓ	4.1 μℓ	8.3 μℓ
PCR mix	18.4 μℓ	27.5 μℓ	36.7 μℓ	45.9 μℓ	45.9 μℓ	91.7 μℓ



Comparison of PCR results using BB solution or house dye in RNA sample.
Sample : total RNA from CHO cells
Gel : 1% agarose gel

Sample A : 207 ng
Sample B : 253 ng

Lane M : 1 kp ladder
Lane 1 : Add house dye to sample A
Lane 2 : Add house dye to sample B
Lane 3 : Add BB solution to sample A
Lane 4 : Add BB solution to sample B



Comparison of PCR results using BB solution or house dye for agarose gel loading
Template : human genomic DNA (50 ng)
Target size : 500 bp
Reaction vol. : 30 μℓ
Loading vol. : 5 μℓ

Lane M1, M2 : 100 bp ladder
Lane 1, 2 : Using AmpONE™ Taq / α-Taq for PCR and house dye for gel loading
Lane 3, 4 : Using AmpONE™ Taq / α-Taq for PCR and using BB solution for gel loading
Lane 5, 6 : Using AmpONE™ Taq / α-Taq included BB solution and then directly gel loading

AmpONE™

Taq DNA Polymerase

Description

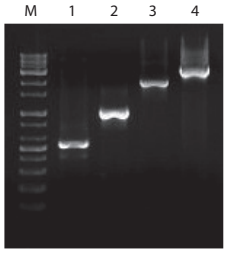
AmpONE™ Taq DNA polymerase is a recombinant enzyme derived from *Thermus aquaticus*, which is cloned and expressed in *E. coli* and possesses the same functions as the native enzyme. This enzyme is a thermostable DNA polymerase of 94 kDa and can be used in various experiments such as general PCR, RT-PCR and dideoxy-terminator-cycle sequencing. We have performed the quality control through activity test, purity test and endonuclease activity test.

Features and Benefits

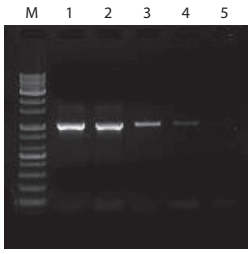
- High fidelity, High purity
- No 3'→5' exonuclease activity : addition of a single adenosine at 3' end of the extension product
- BB solution : Ready to use gel loading dye
- HQ buffer : Special reagent for GC rich template and long size PCR

Application

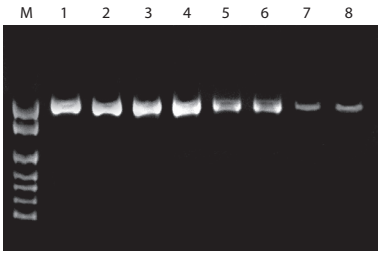
General PCR
- TA-cloning
- DNA sequencing
- RT-PCR



Amplification of human genomic DNA.
To check the amplification of various size the used primers are designed in various region.
Template : human genomic DNA
Lane M : 1 kb ladder
Lane 1 : 517 bp
Lane 2 : 1.1 kb
Lane 3 : 1.9 kb
Lane 4 : 3.1 kb



Sensitivity of AmpONE™ Taq DNA polymerase on the quantity of template.
Template : human genomic DNA
Lane M : 1 kb ladder
Lane 1 : 20 ng
Lane 2 : 10 ng
Lane 3 : 1 ng
Lane 4 : 100 pg
Lane 5 : 10 pg



Comparison of AmpONE™ Taq DNA polymerase with other companies (1.9 kb).
Template : human gDNA (40 ng)
Lane M : 1 kb ladder
Lane 1, 2 : AmpONE™ Taq
Lane 3, 4 : company S
Lane 5, 6 : company I
Lane 7, 8 : company T

AmpONE™ Taq DNA polymerase Reaction mix

for 50 μℓ reaction

10X Taq reaction buffer : 5 μℓ
(optional : HQ buffer 5 ~ 20 μℓ)
dNTP mix (2.5 mM each) : 2 ~ 4 μℓ
primer 1 : 5 ~ 10 pmol
primer 2 : 5 ~ 10 pmol
template : 0.1 ~ 100 ng
Taq (2.5 U / μℓ) : 0.5 ~ 1 μℓ
DW : up to 50 μℓ

Component list

Taq DNA Polymerase (2.5 U / μℓ)
10X Taq Reaction Buffer (with 20 mM Mg^{2+})
dNTP Mix (2.5 mM each)
HQ Buffer
BB Solution
Manual

Cat. No.	Products	Type	Size
501-025	AmpONE™ Taq DNA Polymerase	(2.5 U / μℓ)	250 U
501-050			500 U (250 U x 2)
501-100			1,000 U (250 U x 4)

dNTP mix and set are available.

AmpONE™

α-Taq DNA Polymerase

Description

AmpONE™ α-Taq DNA polymerase is a modified enzyme mixed Taq DNA polymerase with Pfu DNA polymerase which has proof-reading activity and has the ability to amplify a long PCR product (up to 20 kb). Although many other PCR enzymes with high fidelity, mainly derived from the *Pyrococcus furiosus* generally have a slow elongation rate, α-Taq DNA polymerase shows a fast elongation rate and more accurate PCR product formation.

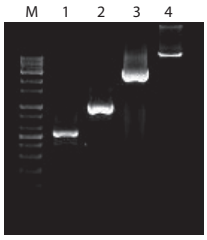
Features and Benefits

- High fidelity, High purity
- Addition of a single adenosine at 3' end of the extension product
- BB solution : Ready to use gel loading dye
- HQ buffer : Special reagent for GC rich template and long size PCR

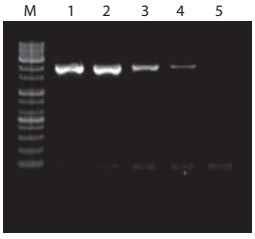
Application

General PCR

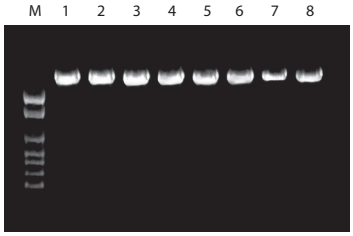
- Cloning for protein expression
- Long PCR not exceeding 20 kb
- Multiplex PCR



Amplification of human genomic DNA.
To check the amplification of various size the used primers are designed in various region.
Template : human genomic DNA
Lane M : 1 kb ladder
Lane 1 : 517 bp
Lane 2 : 1.1 kb
Lane 3 : 3.1 kb
Lane 4 : 14 kb



Sensitivity of AmpONE™ α-Taq DNA polymerase on the quantity of template.
Template : human genomic DNA
Lane M : 1 kb ladder
Lane 1 : 20 ng
Lane 2 : 10 ng
Lane 3 : 1 ng
Lane 4 : 100 pg
Lane 5 : 10 pg



Comparison of AmpONE™ α-Taq DNA polymerase with other companies (3.8 kb).
Template : human genomic DNA (40 ng)
Lane M : 1 kb ladder
Lane 1, 2 : AmpONE™ α-Taq
Lane 3, 4 : company S
Lane 5, 6 : company I
Lane 7, 8 : company T

AmpONE™ α-Taq DNA polymerase Reaction mix

for 50 μℓ reaction

α-Taq reaction buffer : 5 μℓ
(optional : HQ buffer 5 ~ 20 μℓ)
dNTP mix (2.5 mM each) : 2 ~ 4 μℓ
primer 1 : 5 ~ 10 pmol
primer 2 : 5 ~ 10 pmol
template : 0.1 ~ 100 ng
α-Taq (2.5 U / μℓ) : 0.5 ~ 1 μℓ
DW : up to 50 μℓ

Component list

α-Taq DNA Polymerase (2.5 U / μℓ)
10X α-Taq Reaction Buffer (with 25 mM Mg^{2+})
dNTP Mix (2.5 mM each)
HQ Buffer
BB Solution
Manual

Cat. No.	Products	Type	Size
502-025	AmpONE™ α-Taq DNA Polymerase	(2.5 U / μℓ)	250 U
502-050			500 U (250 U x 2)
502-100			1,000 U (250 U x 4)

dNTP mix and set are available.

AmpONE™

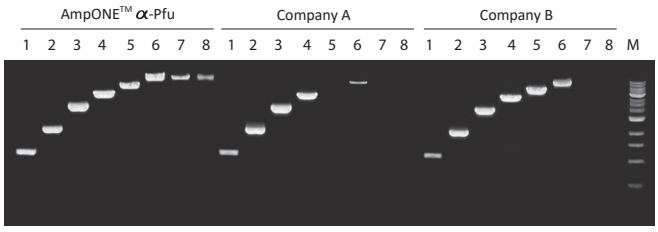
α-Pfu DNA Polymerase

Description

AmpONE™ α-Pfu DNA polymerase is an enhanced version of Pfu DNA Polymerase and it was designed to offer both robust performance and high-fidelity of a PCR. It is purified from *E. coli* carrying a vector encoding *Pyrococcus furiosus* DNA polymerase. AmpONE™ α-Pfu DNA polymerase possesses 5'→3' polymerase activity and intrinsic 3'→5' exonuclease activity. And this enzyme generates blunt ends in the amplification products. AmpONE™ α-Pfu DNA polymerase increases the yield of PCR product and the amplifiable length of target gene in comparison with conventional Pfu DNA polymerase, thus it can be used for long DNA amplification up to 14 Kbp. This enzyme is the most accurate DNA polymerase and its activity showed about 10 fold more accurate than Taq DNA polymerase. It can be used for high-fidelity PCR including cloning, gene expression, and site-directed mutagenesis. AmpONE™ α-Pfu DNA polymerase shows no *E. coli* genomic DNA contamination in amplification (max. 40 cycles) using *E. coli* 16S primer set.

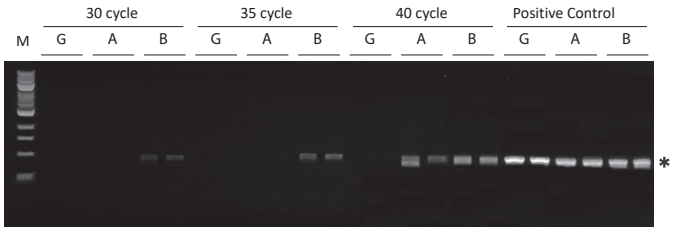
Features and Benefits

- High fidelity with low error rate
- Improved amplification efficiency
- Applicable to long size PCR (up to 14 kb)
- Polymerase without gDNA contamination
- BB solution : Ready to use gel loading dye
- HQ buffer : Special reagent for GC rich template and long size PCR



Comparison of AmpONE™ α-Pfu DNA polymerase with other companies. To check the amplification of various size, the used primers are designed in various resion.

Lane 1 : 500 bp
Lane 2 : 1 kb
Lane 3 : 1.9 kb
Lane 4 : 3.8 kb
Lane 5 : 5 kb
Lane 6 : 7 kb
Lane 7 : 10 kb
Lane 8 : 14 kb
Lane M : 1 kb ladder marker
Template : Human genomic DNA



Comparison of *E. coli* genomic DNA contamination with other companies. PCR reaction is a *E. coli* 16S primer set with 2.5 units DNA polymerase per reaction.
Asterisk(*) : *E. coli* genomic DNA 16S

Lane G : AmpONE™ α-Pfu
Lane A : Company A
Lane B : Company B
Lane M : 100 bp ladder marker

Application

Cloning for protein expression
Site direct mutagenesis
Blunt-end cloning

AmpONE™ α-Pfu DNA polymerase Reaction mix

for 50 μℓ reaction

10X α-Pfu reaction buffer : 5 μℓ
(optional : HQ buffer 5 ~ 20 μℓ)
dNTP mix (2.5 mM each) : 2 ~ 4 μℓ
primer 1 : 5 ~ 10 pmol
primer 2 : 5 ~ 10 pmol
template : 0.1 ~ 200 ng
α-Pfu (2.5 U / μℓ) : 1 μℓ
DW : up to 50 μℓ

Component list

α-Pfu DNA Polymerase (2.5 U / μℓ)
10X α-Pfu Reaction Buffer (with 20 mM Mg^{2+})
dNTP Mix (2.5 mM each)
HQ Buffer
BB Solution
Manual

Cat. No.	Products	Type	Size
504-025	AmpONE™ α-Pfu DNA Polymerase	(2.5 U / μℓ)	250 U
504-050			500 U
504-100			1,000 U

dNTP mix and set are available.

AmpONE™

Fast-Pfu DNA Polymerase

Description

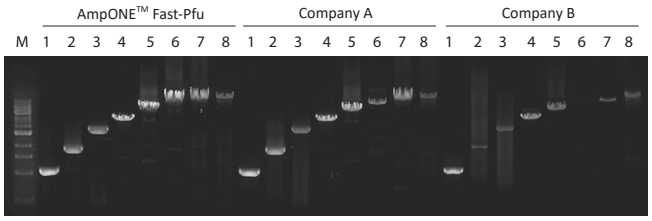
AmpONE™ Fast-Pfu DNA polymerase is a modified version of AmpONE™ Pfu DNA Polymerase, and it was designed to offer both robust performance and high fidelity of PCR. AmpONE™ Fast-Pfu DNA polymerase has 5'→3' polymerase activity as well as intrinsic 3'→5' exonuclease activity, which acts as a proofreading ability. It produces blunt ends in final amplicon. AmpONE™ Fast-Pfu DNA polymerase shows 20 ~ 60% reduced reaction time and 4 fold higher accuracy than Pfu DNA polymerase. Also, this polymerase increases the yield of PCR product and the amplifiable length of target gene in comparison with conventional Pfu DNA polymerase, thus it can be used for long-DNA amplification up to 20 Kbp. AmpONE™ Fast-Pfu DNA polymerase shows no *E. coli* genomic DNA contamination in amplification (max. 40 cycles) using *E. coli* 16S primer set.

Features and Benefits

- High fidelity with low error rate
- Improved amplification efficiency
- Applicable to long size PCR (up to 20 kb)
- Fast reaction speed (30 sec / kb)
- Polymerase without gDNA contamination
- BB solution : Ready to use gel loading dye
- HQ buffer : Special reagent for GC rich template and long size PCR

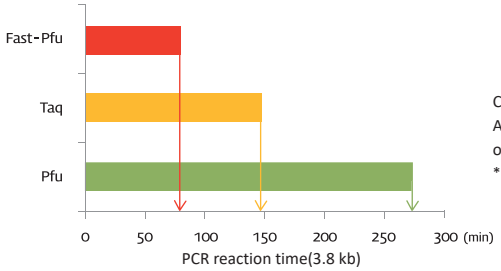
Application

Cloning for protein expression
Long PCR (up to 20 kb)
Site direct mutagenesis
Blunt-end cloning



Comparison of AmpONE™ Fast-Pfu DNA polymerase with other companies. To check the amplification of various size, the used primers are designed in various resion.

Lane 1 : 500 bp
Lane 2 : 1 kb
Lane 3 : 1.9 kb
Lane 4 : 3.8 kb
Lane 5 : 5 kb
Lane 6 : 7 kb
Lane 7 : 10 kb
Lane 8 : 20 kb
Lane M : 1 kb ladder
Template : Human β-globin (50 ~ 200 ng)



Comparison of the PCR reaction time of AmpONE™ Fast-Pfu DNA polymerase and other enzymes.
* PCR reaction time may be varied according to the type of PCR equipment, and heat / cool rate.

AmpONE™ Fast-Pfu DNA polymerase Reaction mix

for 50 μℓ reaction

5X Fast-Pfu reaction buffer : 10 μℓ
(optional : HQ buffer 5 ~ 20 μℓ)
dNTP mix (10 mM each) : 1 μℓ
primer 1 : 5 ~ 10 pmol
primer 2 : 5 ~ 10 pmol
template : 0.1 ~ 200 ng
Fast-Pfu (2.5 U / μℓ) : 0.5 ~ 1 μℓ
DW : up to 50 μℓ

Component list

Fast-Pfu DNA Polymerase (2.5 U / μℓ)
5X Fast-Pfu Reaction Buffer (with 7.5 mM Mg^{2+})
dNTP Mix (10 mM each)
HQ Buffer
BB Solution
Manual

Cat. No.	Products	Type	Size
505-025	AmpONE™ Fast-Pfu	(2.5 U / μℓ)	250 U
505-050			500 U
505-100			1,000 U

dNTP mix and set are available.

AmpONE™

HS-Taq DNA Polymerase

Description

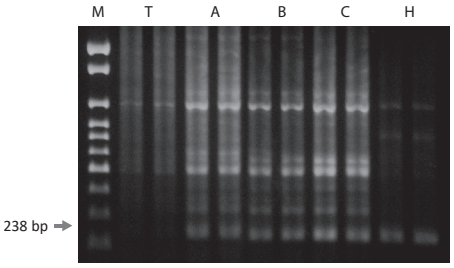
AmpONE™ HS-Taq DNA Polymerase, a modified form of AmpONE™ Taq DNA Polymerase, is designed to enhance the specificity, sensitivity and yield of DNA amplification. The activity of AmpONE™ HS-Taq DNA Polymerase is rapidly restored during the initial denaturation step of PCR. By limiting polymerase activity prior to PCR cycling, the amplification of non-specifically annealed primers or primer dimers is reduced and target yield is increased.

Features and Benefits

- Reduced nonspecific amplification
- High specificity
- Enhanced sensitivity
- Convenient PCR set-up at room temperature
- BB solution : Ready to use gel loading dye
- HQ buffer : Special reagent for GC rich template and long size PCR

Application

- Highly specific amplification
- Real-time PCR
- RT-PCR
- Multiplex PCR
- TA-cloning



Hot start PCR using Catechol-O-methyl transferase (COMT) primer
Template : human genomic DNA 50 ng
Lane M : Marker
Lane T : AmpONE™ Taq
Lane A : company A
Lane B : company B
Lane C : company C
Lane H : AmpONE™ HS-Taq

AmpONE™ HS-Taq DNA polymerase Reaction mix

for 50 μℓ reaction

10X HS-Taq reaction buffer : 5 μℓ
(optional : HQ buffer 5 ~ 20 μℓ)
dNTP mix (2.5 mM each) : 4 μℓ
primer 1 : 5 ~ 10 pmol
primer 2 : 5 ~ 10 pmol
template : 0.1 ~ 100 ng
HS-Taq (2.5 U / μℓ) : 0.5 ~ 1 μℓ
DW : up to 50 μℓ

Component list

HS-Taq DNA Polymerase (2.5 U / μℓ)
10X HS-Taq Reaction Buffer (with 25 mM Mg^{2+})
dNTP Mix (2.5 mM each)
HQ Buffer
BB Solution
Manual

Cat. No.	Products	Type	Size
531-025	AmpONE™ HS-Taq DNA Polymerase	(2.5 U / μℓ)	250 U
531-050			500 U (250 U x 2)
531-100			1,000 U (250 U x 4)

dNTP mix and set are available.

AmpONE™

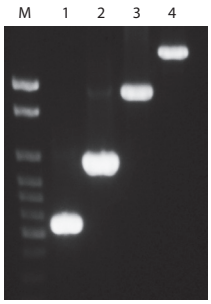
Taq / α-Taq / HS-Taq / α-Pfu Premix

Description

AmpONE™ Taq / α-Taq / HS-Taq / α-Pfu Premix contains all reaction components required for PCR, such as reaction buffer, dNTP, gel loading dye, stabilizer and sediment in addition to DNA polymerase. It is recommended to use in routine PCR (below 10 kb), TA cloning, blunt-end cloning and primer extension. This mixture is stable for 1 year at -20°C or 2 weeks at room temperature. It is ready-to-use mixture pipetting steps are minimized, reducing the possibility of errors and contamination. Room temperature reaction setup using this mixture is fast and easy. (Included loading dye migrates through 1.0% agarose gels run in 0.5X TBE at approximately the same rate as DNA 0 bp and 10 kbp in length.)

Features and Benefits

- 2X solution type
- Use of low tracking dye (1% agarose gel, 0 bp and 10 kbp)
- Minimal handling, Ready to use
- Offer of PCR tube rack



Amplification of AmpONE™ Taq Premix.
To check the amplification of various size the used primers are designed in various region.
Template : human genomic DNA (27 ng)
Lane M : 1 kb ladder
Lane 1 : 514 bp
Lane 2 : 1 kb
Lane 3 : 1.9 kb
Lane 4 : 3.8 kb
Reaction vol. : 20 μℓ Loading vol. : 2 μℓ

AmpONE™ Premix Reaction mix

Reaction vol.	20 μℓ	50 μℓ
Premix	10 μℓ	25 μℓ
primer 1 (10 pmole / μℓ)	1 μℓ	1 ~ 2 μℓ
primer 2 (10 pmole / μℓ)	1 μℓ	1 ~ 2 μℓ
template	1 ~ 50 ng	1 ~ 100 ng
DW	up to 20 μℓ	up to 50 μℓ
final reaction vol.	20 μℓ	50 μℓ

Component list

Taq / α-Taq / HS-Taq / α-Pfu premix 96 tubes
(0.2 ml 8-tube strip x 12 ea)
0.2 ml PCR tube storage rack
Manual

Cat. No.	Products	Format	Type	Size
526-200	AmpONE™ Taq Premix	Solution	20 μℓ	96 tubes
526-500			50 μℓ	96 tubes
528-200	AmpONE™ Taq Premix (w / o dye)	Solution	20 μℓ	96 tubes
528-500			50 μℓ	96 tubes
527-200	AmpONE™ α-Taq Premix	Solution	20 μℓ	96 tubes
527-500			50 μℓ	96 tubes
525-200	AmpONE™ HS-Taq Premix	Solution	20 μℓ	96 tubes
525-500			50 μℓ	96 tubes
523-500	AmpONE™ α-Pfu Premix	Solution	50 μℓ	96 tubes

AmpMaster™

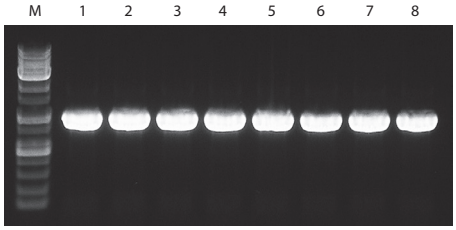
Taq / α-Taq / HS-Taq / α-Pfu

Description

AmpMaster™ series contain all reaction components required for PCR, such as reaction buffer, dNTP, gel loading dye, stabilizer and sediment in addition to Taq / α-Taq / HS-Taq / α-Pfu DNA polymerase. It is recommended for use in routine PCR (below 10 kb), TA cloning, blunt-end cloning and primer extension. AmpMaster™ are stable for 1 year at -20°C or 2 months at 4°C. It is ready-to-use mixture pipetting steps are minimized, reducing the possibility of errors and contamination. Room temperature reaction setup using this mixture is fast and easy. Included loading dye migrates through 1.0% agarose gels run in 0.5X TBE at approximately the same rate as DNA 0 bp and 10 kbp in length.

Features and Benefits

- 2X solution type
- Use of low tracking dye (1% agarose gel, 0 bp and 10 kbp)
- Easy reaction setup, fewer pipetting steps
- Stable for 1 year at -20°C or 2 months at 4°C



Consistency test of AmpMaster™ Taq.
Template : human genomic DNA (27 ng)
Lane M : 1 kb plus ladder
Lane 1 ~ 8 : 1 kb
Reaction vol. : 20 μℓ Loading vol. : 2 μℓ

AmpMaster™ Reaction mix

Reaction vol.	20 μℓ	50 μℓ
2X Master mix	10 μℓ	25 μℓ
primer 1 (10 pmole / μℓ)	1 μℓ	1 ~ 2 μℓ
primer 2 (10 pmole / μℓ)	1 μℓ	1 ~ 2 μℓ
template	1 ~ 50 ng	1 ~ 100 ng
DW	up to 20 μℓ	up to 50 μℓ
final reaction vol.	20 μℓ	50 μℓ

Component list

2X Taq / α-Taq / HS-Taq / α-Pfu PCR master mix
Manual

Cat. No.	Products	Type	Size
541-010	AmpMaster™ Taq	1 ml	0.5 ml x 2 tubes
541-050		5 ml	0.5 ml x 10 tubes
544-010	AmpMaster™ Taq (w / o dye)	1 ml	0.5 ml x 2 tubes
544-050		5 ml	0.5 ml x 10 tubes
542-010	AmpMaster™ α-Taq	1 ml	0.5 ml x 2 tubes
542-050		5 ml	0.5 ml x 10 tubes
545-010	AmpMaster™ HS-Taq	1 ml	0.5 ml x 2 tubes
545-050		5 ml	0.5 ml x 10 tubes
543-010	AmpMaster™ α-Pfu	1 ml	0.5 ml x 2 tubes
543-050		5 ml	0.5 ml x 10 tubes

HyperScript™

Reverse Transcriptase

Description

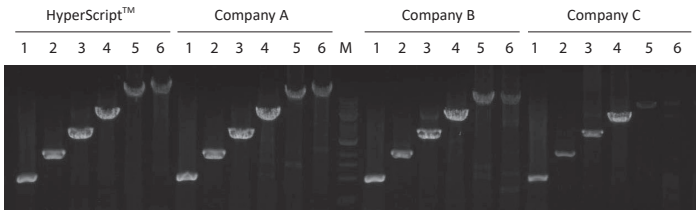
HyperScript™ Reverse Transcriptase is an engineered M-MLV Reverse Transcriptase with reduced RNase H activity and increased thermal stability. The enzyme can be used to synthesize first-strand cDNA at temperatures up to 65°C. RNA target up to 13 kb can be detected with this enzyme. The amount of starting material can vary from 1 pg to 2 μg of total RNA. cDNA synthesis is performed using either total RNA or poly(A)-selected RNA, primed with oligo dT, random primer or a gene specific primer.

Features and Benefits

- New M-MLV originated Reverse Transcriptase
- Reduced RNase H activity - Thermostable RTase (up to 65°C)
- Enhanced Performance : highly efficient and sensitive transcription of RNA amounts (1 pg ~ 2 μg)
- Full-length cDNA synthesis (up to 13 kb)
- High Reproducibility

Application

- RT-PCR
- Cloning for protein expression
- cDNA library



Comparison of HyperScript™ RTase with other companies using primer set of various size.
RT-PCR reactions were performed according to each manufacturer's recommendations
Lane 1 : 489 bp Lane 2 : 1024 bp Lane 3 : 2041 bp
Lane 4 : 3543 bp Lane 5 : 6936 bp (7 kb) Lane 6 : 9816 bp (10 kb)
Lane M : 1 kb ladder

HyperScript™ Reverse Transcriptase Reaction mix

Reaction vol.	20 μℓ
RNA	
Total RNA	up to 2 μg
mRNA	up to 500 ng
primer (use one of the below list)	1 μℓ
- Oligo $(dT)_{20}$	50 μM
- Gene specific primer	2 μM
- Random hexamer	50 ng / μℓ
dNTPs (10 mM)	1 μℓ
DEPC treated water	up to 14 μℓ
Add the followings	
- 10X RTase reaction buffer	2 μℓ
- 0.1 M DTT	2 μℓ
- HyperScript™ RTase (200 U / μℓ)	1 μℓ
- RNase inhibitor (optional)	1 μℓ

Component list

HyperScript™ Reverse Transcriptase (200 U / μℓ)
10X RTase reaction buffer
0.1 M DTT
dNTP mix (10 mM each)
Manual

Cat. No.	Products	Type	Size
601-100	HyperScript™ Reverse Transcriptase	(200 U / μℓ)	10,000 U

HyperScript™

First strand Synthesis Kit

Description

HyperScript™ First strand synthesis kit is ideally organized for synthesizing reaction of first strand cDNA from purified mRNA or total RNA.

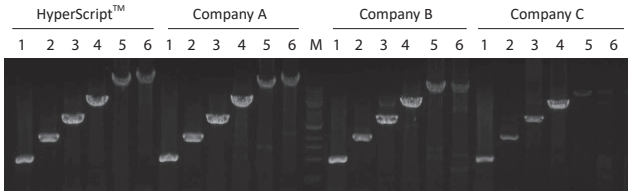
This kit provides all components for cDNA synthesis, including reverse transcriptase, RNase inhibitor, oligo $(dT)_{20}$, random hexamer, dNTPs and nuclease free water. From 1 pg to 2 ug of starting RNA can be applied as template and RNA-target up to 13 kb in length can be synthesized accurately. cDNA synthesis can be performed using either total RNA or poly(A)-selected RNA, primed with oligo dT, random primer or a gene specific primer. The included HyperScript™ Reverse Transcriptase is an engineered M-MLV Reverse Transcriptase with reduced RNase H activity and increased thermal stability. This enzyme can be used stably at temperatures up to 65°C for synthesizing of first-strand cDNA.

Features and Benefits

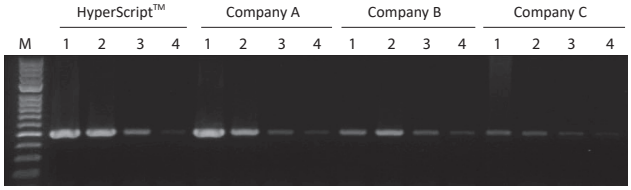
- New M-MLV originated Reverse Transcriptase
- Include all components necessary for cDNA synthesis
- Reduced RNase H activity - Thermostable RTase (up to 65°C)
- Enhanced Performance : highly efficient and sensitive transcription of RNA amounts (1 pg ~ 2 μg)
- Full-length cDNA synthesis (up to 13 kb)
- High Reproducibility

Application

- RT-PCR
- Cloning for protein expression
- cDNA library



Comparison of HyperScript™ RTase with other companies using primer set of various size.
RT-PCR reactions were performed according to each manufacturer's recommendations
Lane 1 : 489 bp Lane 2 : 1024 bp Lane 3 : 2041 bp
Lane 4 : 3543 bp Lane 5 : 6936 bp (7 kb) Lane 6 : 9816 bp (10 kb)
Lane M : 1 kb ladder



Comparison of HyperScript™ First strand Synthesis reaction with other companies on the quantity of RNA.
Template of 552 bp : Mouse kidney total RNA. Lane1 : 1 / 10 (100 ng)
Lane 2 : 1 / 10^2 (10 ng) Lane 3 : 1 / 10^3 (1 ng) Lane 4 : 1 / 10^4 (100 pg)
Lane M1 : 200 bp ladder

HyperScript™ First strand Synthsis Kit Reaction mix

Reaction vol.	20 μℓ
RNA	
Total RNA	up to 2 μg
mRNA	up to 500 ng
primer (use one of the below list)	1 μℓ
- Oligo $(dT)_{20}$	50 μM
- Gene specific primer	2 μM
- Random hexamer	50 ng / μℓ
dNTPs (10 mM)	1 μℓ
DEPC treated water	up to 14 μℓ
Add the followings	
- 10X RTase reaction buffer	2 μℓ
- 0.1 M DTT	2 μℓ
- HyperScript™ RTase (200 U / μℓ)	1 μℓ
- RNase inhibitor (optional)	1 μℓ

Component list

HyperScript™ Reverse Transcriptase (200 U / μℓ)
10X RTase reaction buffer
0.1 M DTT
dNTP mix (10 mM each)
ZymAll™ RNase Inhibitor (40 U / μℓ)
Oligo $(dT)_{20}$ (50 μM)
Random hexamer (50 ng / μℓ)
Nuclease free water
Manual

Cat. No.	Products	Type	Size
601-005	HyperScript™ Reverse Transcriptase	(200 U / μℓ)	50 reaction

HyperScript™

RT Premix

Description

HyperScript™ RT premix is a 2X pre-mixed solution for Reverse Transcriptase(RT) reaction, which is put into 8-strip tube by aliquots, and ready to use. This premix already contains all components required for RT reaction, such as reaction buffer, dNTPs, RNase inhibitor and stabilizer in addition to the enzyme which is an advanced version of M-MLV RTase, and its concentration of components is adjusted for 20 μℓ reaction volume of RT.

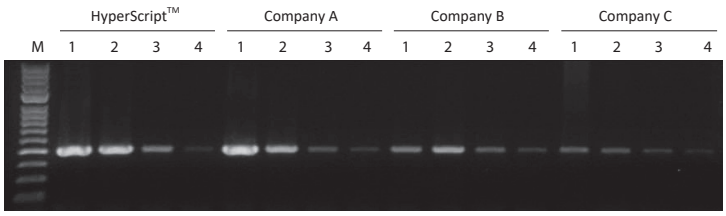
The contained Reverse Transcriptase has an increased thermal-stability, high accuracy and productivity, and this makes that up to 8 kb in length can be synthesized accurately.

Features and Benefits

- HyperScript™ RTase based
- Include all components necessary for cDNA synthesis : RTase, dNTPs, reaction buffer, stabilizer, RNase inhibitor, primer (oligo $(dT)_{20}$ or random hexamer)
- Synthesizable capability up to 8 kb

Application

- RT-PCR
- Cloning for protein expression
- cDNA library



Comparison of HyperScript™ RT Premix reaction with other companies on the quantity of RNA.
Template : Mouse kidney total RNA
Lane 1 : 1/10 (100 ng) Lane 2 : $1/10^2$ (10 ng) Lane 3 : $1/10^3$ (1 ng) Lane 4 : $1/10^4$ (100 pg)
Lane M : 200 bp ladder

HyperScript™ RT Premix (2X RT Premix)

Reaction vol.	20 μℓ
2X RT Premix	10 μℓ
RNA (use one of the below list)	
- Total RNA	1 pg ~ 2 μg
- Poly (A) RNA	10 pg ~ 500 ng
Primer (use one of the below list)	1 μℓ
- Oligo $(dT)_{20}$	50 μM
- Gene specific primer	2 μM
- Random hexamer	50 ng / μℓ
DEPC treated water	up to 20 μℓ

Component list

HyperScript™ RT Premix
(0.2 ml 8-strip tube x 12 ea)
0.2 ml PCR tube storage rack
Manual

Cat. No.	Products	Format	Type	Size
601-602	HyperScript™ RT Premix	Solution	20 μℓ	96 tubes
601-632	HyperScript™ RT Premix with oligo$(dT)_{20}$	Solution	20 μℓ	96 tubes
601-642	HyperScript™ RT Premix with random hexamer	Solution	20 μℓ	96 tubes

HyperScript™

RT Master mix

Description

HyperScript™ RT Master mix is a pre-mixed solution ready to use for Reverse Transcriptase(RT) reaction. The concentration of this mastermix is adjusted to 2X, and so the reaction volume can be adjusted according to the experimental purpose. This master mix contains all components required for RT reaction, such as reaction buffer, dNTPs, RNase inhibitor and stabilizer in addition to the enzyme which is an advanced version of M-MLV RTase.

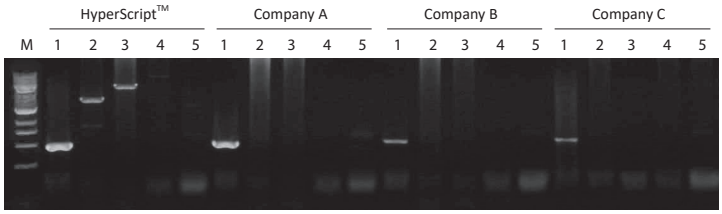
The contained Reverse Transcriptase has an increased thermal-stability, high accuracy and productivity, and this makes that up to 8 kb in length can be synthesized accurately.

Features and Benefits

- HyperScript™ RTase based
- Include all components necessary for cDNA synthesis : RTase, dNTPs, reaction buffer, stabilizer, RNase inhibitor, primer (oligo $(dT)_{20}$ or random hexamer)
- Synthesizable capability up to 8 kb

Application

- RT-PCR
- Cloning for protein expression
- cDNA library



Comparison of HyperScript™ RT Master mix reaction with other companies on the various size.
Template : Mouse kidney total RNA
Lane 1 : 489 bp Lane 2 : 2041 bp Lane 3 : 3543 bp Lane 4 : 6936 bp Lane 5 : 9816 bp

HyperScript™ RT Master mix (2X RT Master mix)

Reaction vol.	20 μℓ
RNA (use one of the below list)	
- Total RNA	1 pg ~ 2 μg
- Poly (A) RNA	10 pg ~ 500 ng
Primer (use one of the below list)	1 μℓ
- Oligo $(dT)_{20}$	50 μM
- Gene specific primer	2 μM
- Random hexamer	50 ng / μℓ
DEPC treated water	up to 10 μℓ
2X Master mix	10 μℓ

Component list

HyperScript™ Master mix
(Each tube contains 500 μℓ of 2X HyperScript™ RT master mix solution)
Manual

Cat. No.	Products	Type	Size
601-710	HyperScript™ Reverse Transcriptase	1 ml	0.5 ml x 2 tubes
601-730	HyperScript™ RT Master mix with oligo$(dT)_{20}$	1 ml	0.5 ml x 2 tubes
601-740	HyperScript™ RT Master mix with random hexamer	1 ml	0.5 ml x 2 tubes

HyperScript™

One-step RT-PCR Premix

Description

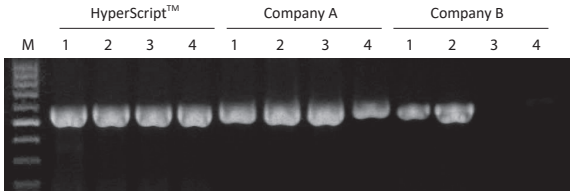
HyperScript™ One-step RT-PCR premix is a 2X premix ready to use for Reverse Transcriptase(RT) reaction and Polymerase Chain Reaction(PCR). The component of this premix is optimized for 20 μℓ of reaction volume which is widely used for many downstream applications. This mix contains HyperScript™ RTase and AmpONE™ HS-Taq DNA polymerase and both RT and PCR reactions are carried out successively in a single tube. HS-Taq DNA polymerase remains inactivated until RT reaction is completed, and it is turned on at high temperature of PCR cycle. HS-Taq polymerase can amplify the fragment up to 5 kb in length. HyperScript™ One-step RT-PCR premix contains all reaction components required for RT and PCR, such as reaction buffer, dNTPs, RNase inhibitor and stabilizer in addition to enzymes, except primers and templates.

Features and Benefits

- Based on HyperScript™ RTase
- Performance completes a reaction in one time for cDNA synthesis and PCR from RNA
- Maximize the thermal stability by using Hot start Taq
- Contains all reaction components such as RTase, HS-Taq, reaction buffer, dNTPs, RNase Inhibitor and stabilizer
- Extension up to 5 kb
- Minimize RNase contamination and experimental errors

Application

- RT-PCR
- Cloning for protein expression



Comparison of HyperScript™ One-step RT-PCR reaction with other companies at various temperature.
Template : Mouse kidney total RNA
Lane 1 : 45°C Lane 2 : 50°C Lane 3 : 55°C Lane 4 : 60°C

HyperScript™ One-step RT-PCR Premix (2X One-step RT-PCR Premix)

Reaction vol.	20 μℓ
2X One-step RT-PCR Premix	10 μℓ
Total RNA	up to 2 μg
Forward Primer (10 pmol / μℓ)	1 μℓ
Reverse Primer (10 pmol / μℓ)	1.5 μℓ
DEPC treated water	up to 20 μℓ

Component list

HyperScript™ One-step RT-PCR Premix
(0.2 ml 8-strip tube x 12 ea)
0.2 ml PCR tube storage rack
Manual

Cat. No.	Products	Format	Type	Size
602-102	HyperScript™ One-step RT-PCR Premix	Solution	20 μℓ	96 tubes

HyperScript™

One-step RT-PCR Master mix

Description

HyperScript™ One-step RT-PCR master mix is a 2X premix ready to use for Reverse Transcriptase(RT) reaction and Polymerase Chain Reaction (PCR). This mix contains HyperScript™ RTase and AmpONE™ HS-Taq DNA polymerase and both RT and PCR reactions are carried out successively in a single tube. HS-Taq DNA polymerase remains inactivated until RT reaction is completed, and it is turned on at high temperature of PCR cycle.

HS-Taq polymerase can amplify the fragment up to 5 kb in length. The reaction volume can be adjusted according to the experimental purpose.

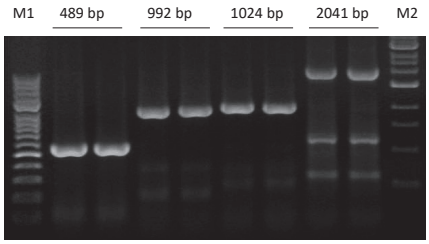
HyperScript™ One-step RT-PCR master mix contains all reaction components required for RT and PCR, such as reaction buffer, dNTPs, RNase inhibitor and stabilizer in addition to enzymes, except primers and templates.

Features and Benefits

- Based on HyperScript™ RTase
- Performance completes a reaction in one time for cDNA synthesis and PCR from RNA
- Maximize the thermal stability by using Hot start Taq
- Contains all reaction components such as RTase, HS-Taq, reaction buffer, dNTPs, RNase Inhibitor and stabilizer
- Extension up to 5 kb
- Minimize RNase contamination and experimental errors

Application

- RT-PCR
- Cloning for protein expression



Amplification of HyperScript™ One-step RT-PCR Master mix with AmpONE™ HS-Taq DNA polymerase.
To check the amplification of various size of target gene.
Template : 93.7 ng of Mouse kidney total RNA
M1 : 200 bp ladder M2 : 1 kb ladder

HyperScript™ One-step RT-PCR Master mix (2X One-step RT-PCR Master mix)

Reaction vol.	20 μℓ
2X One-step RT-PCR Premix	10 μℓ
Total RNA	up to 2 μg
Forward Primer (10 pmol / μℓ)	1 μℓ
Reverse Primer (10 pmol / μℓ)	1.5 μℓ
DEPC treated water	up to 20 μℓ

Component list

HyperScript™ Master mix
(Each tube contains 500 μℓ of 2X HyperScript™ One-step RT-PCR Master mix solution)
Manual

Cat. No.	Products	Format	Type	Size
602-110	HyperScript™ One-step RT-PCR Master mix	Solution	1 ml	0.5 ml x 2 tubes

RealAmp™

SYBR qPCR Master mix (Low ROX or High ROX)

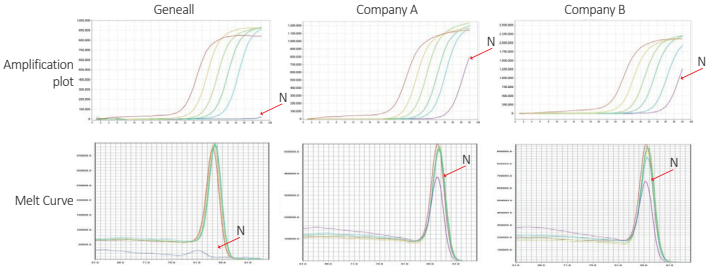
Description

RealAmp™ SYBR qPCR Master mix provides fast and robust amplification across a wide range of templates through high quality antibody-based hot start PCR enzyme without compromising sensitivity, specificity, dynamic range, or PCR efficiency. GeneAll has engineered most optimal reaction buffers to minimize non-specific amplification and / or primer dimer formation.
RealAmp™ SYBR qPCR Master mix, supplied in a 2X concentration, is a ready-to-use master mix to perform real-time PCR using SYBR I fluorescent dye.

Features and Benefits

- High sensitivity, High specificity
- Optimized formulation of the conventional SYBR Green fluorescent dye-based real-time PCR to significantly suppress primer-dimers and nonspecific amplification
- Taq DNA polymerase efficiently paired with monoclonal antibody for increased accuracy
- Convenient 2X Master mix format requires only the addition of primers and template
- Enhanced sensitivity for amplifying cDNA targets as low as 1 pg

Application



Comparison of amplification quality between RealAmp™ SYBR qPCR Master Mix and other company's Master Mix.
Template DNA : Human genomic DNA (50 ng, 10 ng, 2 ng, 400 pg, 80 pg), Target gene : CCBL, Product size : 131 bp
Instrument : Applied Biosystems 7500 Real-Time PCR Systems
*N : Negative control

RealAmp™ SYBR qPCR Master mix (2X Master mix)

Reaction vol.	20 μℓ
2X SYBR qPCR Master mix	10 μℓ
Template DNA	10 pg ~ 100 ng
Primer 1	1 μℓ
Primer 2	1 μℓ
(Optional) ROX reference dye	1 μℓ
Nuclease free water	up to 20 μℓ

Component list

RealAmp™ SYBR qPCR Master mix
Low / High ROX reference dye
Nuclease-free water
Manual

Cat. No.	Products	Format	Type	Size
801-020	RealAmp™ SYBR, PCR Master mix, Low Rox	Solution	20 μℓ	200 rxn
801-050	RealAmp™ SYBR, PCR Master mix, Low Rox	Solution	20 μℓ	500 rxn
801-021	RealAmp™ SYBR, PCR Master mix, High Rox	Solution	20 μℓ	200 rxn
801-051	RealAmp™ SYBR, PCR Master mix, High Rox	Solution	20 μℓ	500 rxn

ZymAll™

RNase Inhibitor

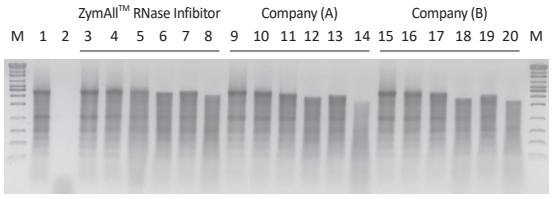
Description

ZymAll™ Ribonuclease (RNase) Inhibitor is purified by affinity chroma tography from a recombinant strain of *E. coli* expressing a cloned porcine liver gene. The purified 52 kDa protein is acidic enzyme. ZymAll™ RNase Inhibitor exerts its inhibitory effect by noncovalently binding to RNase at a 1:1 ratio. This enzyme is active against RNase A, RNase B and RNase C.

Features and Benefits

- Concentration : 40 U / μℓ
- Removal RNase contamination and experimental errors
- Applicable to cDNA synthesis

Application



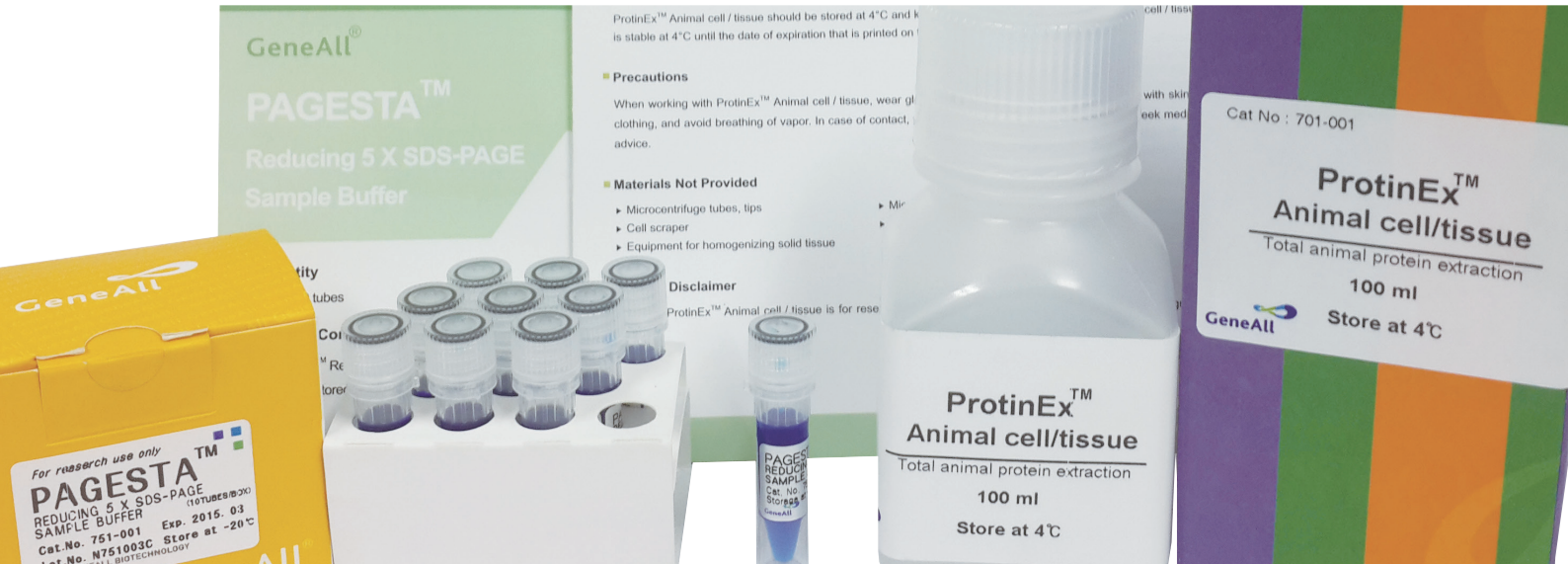
Comparison test of RNA degradation by the concentration of RNase Inhibitor.

Lane 1 : Control, Template RNA 1 ug
Lane 2 : RNase only
Lane 3, 9, 15 : 40 U (w / o RNase)
Lane 4, 10, 16 : 40 U
Lane 5, 11, 17 : 20 U
Lane 6, 12, 18 : 4 U
Lane 7, 13, 19 : 10 U
Lane 8, 14, 20 : 2 U

Component list
ZymAll™ RNase Inhibitor
Manual

Cat. No.	Products	Format	Type	Size
609-004	ZymAll™ RNase Inhibitor	Solution	40 U / μℓ	4,000 Units
609-010	ZymAll™ RNase Inhibitor	Solution	40 U / μℓ	10,000 Units

07. Protein Purification System



ProtinEx™ Animal cell / tissue

For total Protein isolation from animal tissues and cultured cells

Description

ProtinEx™ Animal cell / tissue provides fast and easy methods for the extraction of total soluble proteins from animal cells and tissues. When extracting proteins, efficient disrupting of cells or tissues is essential for recovering whole cellular proteins. Using ProtinEx™ Animal cell / tissue's optimized procedure, the cell membranes composed of phospholipids and membrane proteins can be easily and efficiently disrupted without further treatment like sonication or freeze / thaw step. Owing to lack of ionic disturbance the denaturing power of non-ionic detergent is generally milder than that of ionic detergent. Non-ionic lytic condition of ProtinEx™ Animal cell / tissue enables the isolation of functionally active proteins which can be applied to protein-protein interaction experiments, reporter assays, protein assays, immunoassays, and protein purification.

ProtinEx™ Animal cell / tissue is designed to simplify and expedite the procedure of protein extraction. The sample harvested in ProtinEx™ Animal cell / tissue goes to incubating on ice for 5 minutes and centrifuging for 10 minutes to separate cell debris. The supernatant can be directly used for downstream applications, and the whole procedure takes only 30 minutes.

ProtinEx™ Animal cell / tissue procedure supports the extraction of proteins from up to 100 mg of animal tissues or 2 x 10^7 of animal cells per one extraction. The maximum yield reaches 11 ㎎ per 50 ㎎ of animal tissues and 1300 ㎍ per 1 x 10^7 of animal cells, respectively.

Features and Benefits

- Isolate native form of proteins based on non-ionic detergent
- Direct lysis of cultured cells in a plate
- Extraction of total soluble proteins from any type of cells and tissues
- Applicable to numerous down stream applications (Western blot, BCA assay, Bradford assay, Reporter assay and etc.)

Protein Quantification Result

The protein yields using the ProtinEx™ Animal cell / tissue

(Quantitative analysis of Protein by BCA assay)

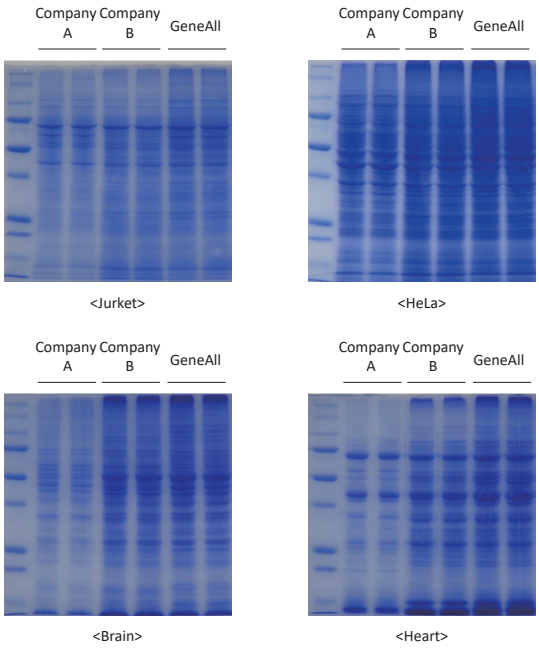
Cell lines	Amount of Starting material	Average yield of Total Protein
CHO	≒ 1 x 10^7	~ 319 ㎍
RAW264.7	≒ 1 x 10^7	~ 500 ㎍
Jurkat	≒ 1 x 10^7	~ 380 ㎍
Hela	≒ 1 x 10^7	~ 1300 ㎍

Tissue type	Amount of Starting material	Average yield of Total Protein
Liver (rat)	≒ 50 mg	~ 11.0 mg
Kidney (rat)	≒ 50 mg	~ 6.5 mg
Lung (rat)	≒ 50 mg	~ 8.1 mg
Heart (rat)	≒ 50 mg	~ 9.0 mg
Brain (rat)	≒ 50 mg	~ 7.6 mg
Stomach (rat)	≒ 50 mg	~ 10.0 mg
Spleen (rat)	≒ 20 mg	~ 5.8 mg

Cat. No.	Products	Type	Size
701-001	ProtinEx™ Animall cell / tissue	Solution	100

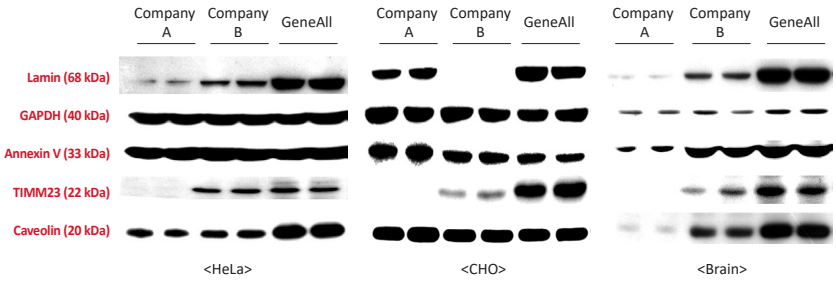
Protein Purification Results

Coomassie blue stainung by SDS-PAGE gel



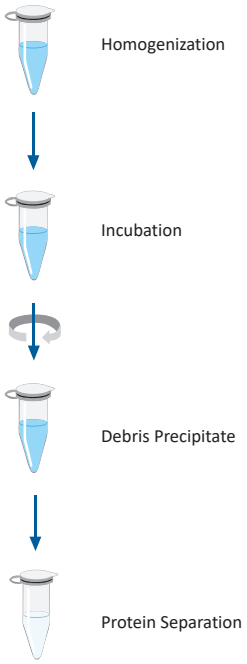
Comparison of ProtinEx™ Animal cell / tissue with other companies. To check the extracted protein of various sample type, total protein was extracted from each sample types using ProtinEx™ Animal cell/tissue.

Western Bolt



Comparison of ProtinEx™ Animal cell / tissue with other companies. To check the extracted total protein using various antibody, total protein was extracted from each sample types.

Procedures



Component list
ProtinEx™ Animal cell / tissue Total Protein Extraction Solution
Manual

PAGESTA™ Reducing 5X SDS-PAGE Sample Buffer

Description

PAGESTA™ Reducing 5X SDS-PAGE Sample Buffer is based on the method of Laemmli. PAGESTA™ Reducing 5X SDS-PAGE Sample Buffer is designed for loading of protein samples in SDS-PAGE analysis.

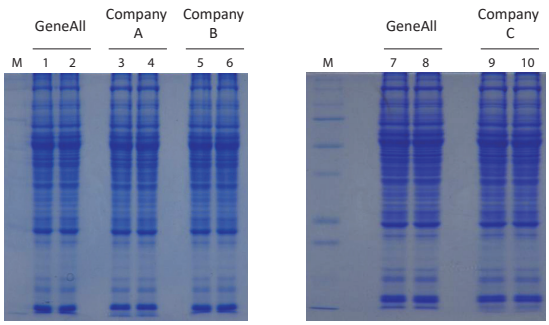
Features and Benefits

- Based on Laemmli method
- Clear visualization of bands
- 5X concentrated buffer adjusts the quantity of loaded proteins
- Save cost and time for SDS-PAGE

Buffer Composition

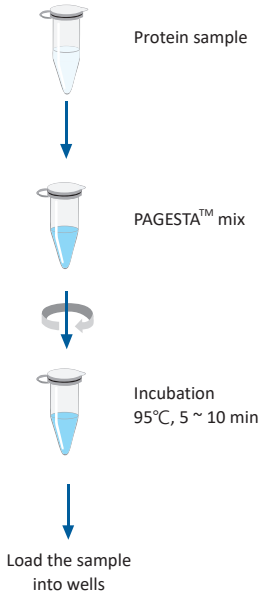
PAGESTA™ Reducing 5X SDS-PAGE Sample Buffer	
Tris-HCl (pH 6.8, 25°C)	250 mM
Glycerol	25%
Sodium dodecyl sulfate (SDS)	10%
Bromophenol Blue	0.1%
DTT	0.5 M

Coomassie Blue Staining by SDS-PAGE Gel



(Sample : Liver 100 mg / prep, Loading : 30 μg / lane)
Lane 1, 2, 7, 8 : GeneAll PAGESTA™
Lane 3, 4 : Company A
Lane 5, 6 : Company B
Lane 9, 10 : Company C

Procedures

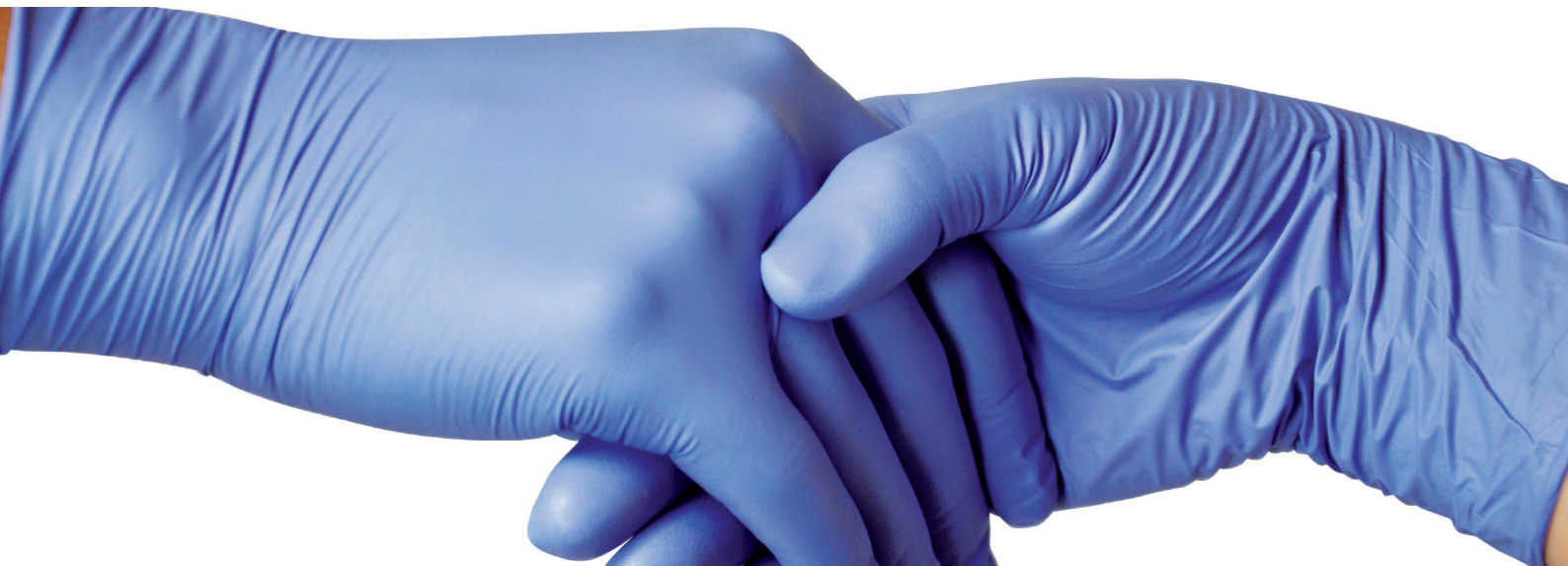


Component list

PAGESTA™
Reducing 5X SDS-PAGE Sample Buffer
Manual

Cat. No.	Products	Type	Size
751-001	PAGESTA™ Reducing 5X SDS-PAGE Sample Buffer	Solution	1 ml x 10 tubes

08. Other Items



GENESTA™

DNA size markers

Description

The 1 Kb DNA Ladder is designed and provided as molecular weight standards for agarose gel electrophoresis. The ladder consists of 13 fragments ranging in length from 250 to 12000 bp. The 1500 bp and 4000 bp bands have increased intensity to serve as reference bands. The approximate mass for each band is 50 ng DNA, and 150 ng for reference band, in the 5 ㎕ sample.

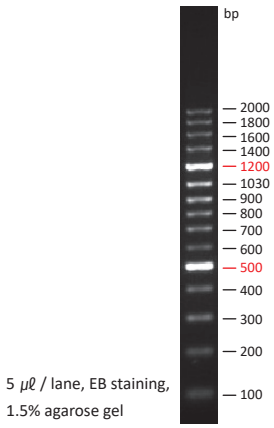
The 250 bp DNA Ladder is designed and provided as molecular weight standards for agarose gel electrophoresis. The ladder consists of 9 fragments ranging in length from 100 to 5000 bp. The 500 bp and 1500 bp bands have increased intensity to serve as reference bands. The approximate mass for each band is 50 ng DNA, and 150 ng for reference band, in the 5 ㎕ sample.

The 100 bp DNA Ladder is designed and provided as molecular weight standards for agarose gel electrophoresis. The ladder consists of 15 fragments ranging in length from 100 to 2000 bp. The 500 bp and 1200 bp bands have increased intensity to serve as reference bands. The approximate mass for each band is 50 ng DNA, and 150 ng for reference band, in the 5 ㎕ sample. The ladder is dissolved in 1X loading dye and ready-to-use.

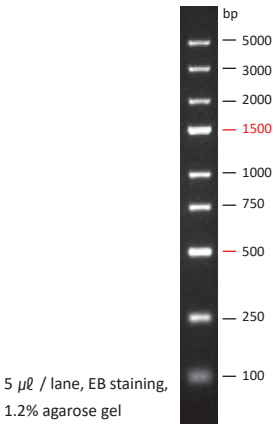
Features and Benefits

- Universal ladders to cover broad range of DNA size
- High intensity reference & sharp bands
- Supplied with loading dye
- 500 times can be used for Mupid small agarose gel
- Ready-to-use ladders are stable for 1 year at -20°C
- 5X Loading Dye is supplied as a free gift.

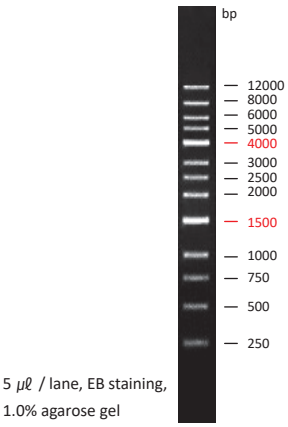
GENESTA™ 100 bp DNA Ladder



GENESTA™ 250 bp DNA Ladder



GENESTA™ 1 kb DNA Ladder



Cat. No.	Products	Size	Components
GA-100	GENESTA™ 1 Kb DNA Ladder	500 ㎕	5X Loading Dye, 10 mM Tris-HCl, 5 mM EDTA (pH 7.6), 30% Glycerol (DNA stabilizer)
GA-010	GENESTA™ 100 bp DNA Ladder	500 ㎕	
GA-025	GENESTA™ 250 bp DNA Ladder	500 ㎕	

Gentex™

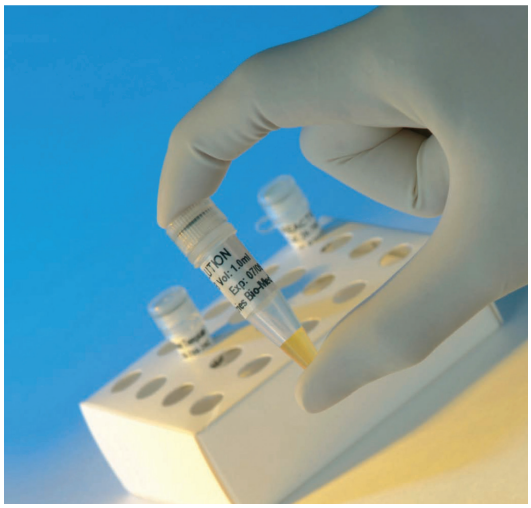
Prestige Latex Examination Gloves

Latex

Material : Natural Rubber Latex and compounding materials safe for use in medical.
Description : Ambidextrous, Beaded Cuff, Textured, Powder-Free, Polymer coated 5.5 Mil.
Available Color : Natural

Standards of Conformance :
Product conforms to the following test standards

ASTM D3578	Standard Specification for Rubber Examination Gloves
ASTM D412	Tensile Properties of Vulcanized Rubbers
ASTM D573	Accelerated Aging for Latex (at 70°C for 166 ± 2 hr)
ASTM D5151	Standard Test for Detection of Holes in Medical Gloves
ASTM D6124	Standard Test Method for Residual Powder on Medical Gloves
ASTM D5712	Standard Test Method for the Analysis of Aqueous Extractable Protein in Natural Rubber and its Product Using the Modified Lowry Method
ANSI / ASQC Z1.4	Sampling Procedures and Tables for Inspection by Attributes



Cat. No.	Products	Size	Components
GTP-100XS	Gentex™ Prestige Latex Glove	Extra Small	100 gloves / pack 10 packs / box
GTP-100S		Small	
GTP-100M		Medium	
GTP-100L		Large	
GTP-100XL		Extra Large	

Gentex™

Nitrile Examination Gloves

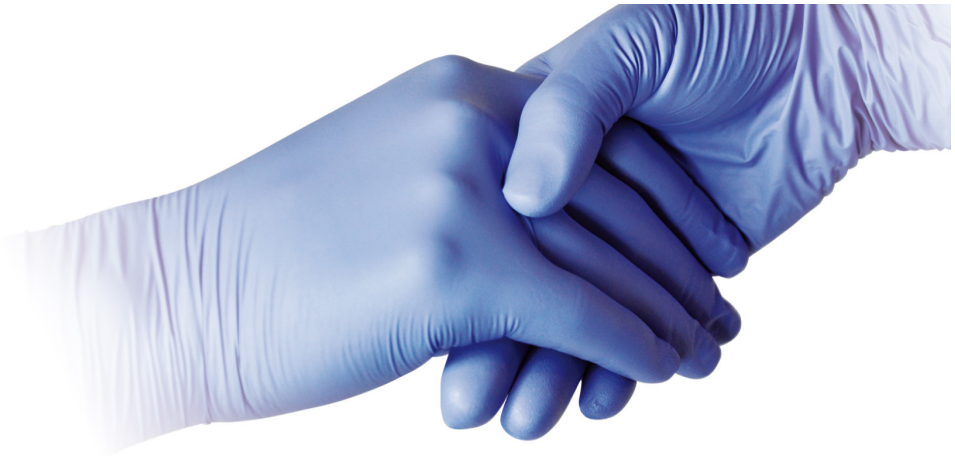
Nitrile

Material : Synthetic Latex and compounding materials safe for use in medical and food handling.
Description : Ambidextrous, Beaded Cuff, Micro-textured, Chlorinated, Powder Free, 3.5 Mil.
Available Colour : Aqua Blue

Standards of Conformance:

Product conforms to the following test standards

ASTM D6319	Standard Specification for Nitrile Examination Gloves
ASTM D412	Tensile properties of Vulcanized Rubbers
ASTM D573	Accelerated Aging for Latex (at 70°C for 166 + 2 hr)
ASTM D5151	Standard Test for Detection of Holes in Medical Gloves
ASTM D6124	Standard Test Method for Residual Powder on Medical Gloves
ANSI / ASQC Z1.4	Sampling Procedures and Tables for Inspection by Attributes



Cat. No.	Products	Size	Components
GTN-100XS	Gentex™ Nitrile Glove	Extra Small	100 gloves / pack 10 packs / box
GTN-100S		Small	
GTN-100M		Medium	
GTN-100L		Large	
GTN-100XL		Extra Large	

GeneAll®

GeneAll Biotechnology Co., Ltd. is a manufacturing company specialized in the field of molecular biology and life science. We have been dedicated to provide the most suitable biotechnology products for the best research achievement since 1999. Currently we have been supplying nearly 100 products covering the field of life science for academic research. Based on that, we are trying our best to bring new prospective products and innovative technologies to the field of molecular diagnostics as well. Ultimately, we are aiming to be a leading solution provider deeply involved in every step of molecular diagnostics. We will keep asking the fundamental questions about research and diagnostic process to accelerate scientific exploration which they can secure the life, health and safety of the future generation.

Ordering Information

Products	Scale	Size	Cat. No.	Type
Hybrid-Q™ *for rapid preparation of plasmid DNA*				
Plasmid Rapidprep	mini	50	100-150	spin
		200	100-102	
Exprep™ *for preparation of plasmid DNA*				
Plasmid SV	mini	50	101-150	spin / vacuum
		200	101-102	
	Midi	26	101-226	spin / vacuum
		50	101-250	
		100	101-201	
Exfection™ *for preparation of transfection-grade plasmid DNA*				
Plasmid LE *(Low Endotoxin)*	mini	50	111-150	spin / vacuum
		200	111-102	
	Midi	26	111-226	spin / vacuum
		100	111-201	
Plasmid EF *(Endotoxin Free)*	Midi	20	121-220	spin
		100	121-201	
Expin™ *for purification of fragment DNA*				
Gel SV	mini	50	102-150	spin / vacuum
		200	102-102	
PCR SV	mini	50	103-150	spin / vacuum
		200	103-102	
CleanUp SV	mini	50	113-150	spin / vacuum
		200	113-102	
Combo GP	mini	50	112-150	spin / vacuum
		200	112-102	
Exgene™ *for isolation of total DNA*				
Tissue SV	mini	100	104-101	spin / vacuum
		250	104-152	
	Midi	26	104-226	spin / vacuum
		100	104-201	
	MAXI	10	104-310	spin / vacuum
		26	104-326	
Tissue Plus SV	mini	100	109-101	spin / vacuum
		250	109-152	
	Midi	26	109-226	spin / vacuum
		100	109-201	
	MAXI	10	109-310	spin / vacuum
		26	109-326	

Products	Scale	Size	Cat. No.	Type
Exgene™ *for isolation of total DNA*				
Blood SV	mini	100	105-101	spin / vacuum
		250	105-152	
	Midi	26	105-226	spin / vacuum
		100	105-201	
	MAXI	10	105-310	spin / vacuum
		26	105-326	
Cell SV	mini	100	106-101	spin / vacuum
		250	106-152	
	MAXI	10	106-310	spin / vacuum
		26	106-326	
Clinic SV	mini	100	108-101	spin / vacuum
		250	108-152	
	Midi	26	108-226	spin / vacuum
		100	108-201	
	MAXI	10	108-310	spin / vacuum
		26	108-326	
Genomic DNA micro		50	118-050	spin
Plant SV	mini	100	117-101	spin / vacuum
		250	117-152	
	Midi	26	117-226	spin / vacuum
		100	117-201	
	MAXI	10	117-310	spin / vacuum
		26	117-326	
Soil DNA mini	mini	50	114-150	spin
Stool DNA mini	mini	50	115-150	spin
Viral DNA / RNA	mini	50	128-150	spin
FFPE Tissue DNA	mini	50	138-150	spin
	mini	250	138-152	spin
Rice SV	mini	100	127-101	spin
GenEx™ *for isolation of total DNA without spin column*				
GenEx™ Blood	Sx	100	220-101	solution
		500	220-105	
	Lx	100	220-301	solution
GenEx™ Cell	Sx	100	221-101	solution
		500	221-105	
	Lx	100	221-301	solution
GenEx™ Tissue	Sx	100	222-101	solution
		500	222-105	
	Lx	100	222-301	solution
GenEx™ Plant	Sx	100	227-101	solution
	Mx	100	227-201	
	Lx	100	227-301	
GenEx™ Plant Plus	Sx	100	228-101	solution
	Mx	50	228-250	
	Lx	20	228-320	

Products	Scale	Size	Cat. No.	Type
DirEx™ *for preperation of PCR-template without extraction*				
DirEx™		100	250-101	solution
DirEx™ *Fast*-Tissue		96 T	260-011	solution
DirEx™ *Fast*-Cultured cell		96 T	260-021	solution
DirEx™ *Fast*-Whole blood		96 T	260-031	solution
DirEx™ *Fast*-Blood stain		96 T	260-041	solution
DirEx™ *Fast*-Hair		96 T	260-051	solution
DirEx™ *Fast*-Buccal swab		96 T	260-061	solution
DirEx™ *Fast*-Cigarette		96 T	260-071	solution
RNA series *for preperation of total RNA*				
RiboEx™	mini	100	301-001	solution
		200	301-002	
Hybrid-R™	mini	100	305-101	spin
Hybrid-R™ Blood RNA	mini	50	315-150	spin
Hybrid-R™ miRNA	mini	50	325-150	spin
RiboEx™ LS	mini	100	302-001	solution
		200	302-002	
Riboclear™	mini	50	303-150	spin
Riboclear™ Plus	mini	50	313-150	spin
Ribospin™	mini	50	304-150	spin
Ribospin™ II	mini	50	314-150	spin
		300	314-103	
Ribospin™ vRD	mini	50	302-150	spin
Ribospin™ vRD Plus	mini	50	312-150	spin
Ribospin™ vRD II	mini	50	322-150	spin
Ribospin™ Plant	mini	50	307-150	spin
Ribospin™ Seed / Fruit	mini	50	317-150	spin
Allspin™	mini	50	306-150	spin
RiboSaver™	mini	100	351-001	solution

Products	Scale	Size	Cat. No.	Type
AmpONE™ *for PCR amplification*				
Taq Premix	96 tubes	20 μℓ	526-200	solution
		50 μℓ	526-500	
Taq Premix (w / o dye)	96 tubes	20 μℓ	528-200	solution
		50 μℓ	528-500	
α-Taq Premix	96 tubes	20 μℓ	527-200	solution
		50 μℓ	527-500	
HS-Taq Premix	96 tubes	20 μℓ	525-200	solution
		50 μℓ	525-500	
α-Pfu Premix	96 tubes	50 μℓ	523-500	solution
dNTP Mix		500 μℓ	509-020	2.5 mM each
dNTP set (set of dATP, dCTP, dGTP and dTTP)		1 ml x 4 tubes	509-040	100 mM
AmpMaster™ *for PCR amplification*				
Taq Master mix	0.5 ml x 2 tubes		541-010	solution
	0.5 ml x 10 tubes		541-050	solution
α-Taq Master mix	0.5 ml x 2 tubes		542-010	solution
	0.5 ml x 10 tubes		542-050	solution
HS-Taq Master mix	0.5 ml x 2 tubes		545-010	solution
	0.5 ml x 10 tubes		545-050	solution
α-Pfu Master mix	0.5 ml x 2 tubes		543-010	solution
	0.5 ml x 10 tubes		543-050	solution

* Each dNTP is available

Products	Scale	Size	Cat. No.	Type
HyperScript™ *for Reverse Transcription*				
Reverse Transcriptase	10,000 U		601-100	solution
RT Master mix	0.5 ml x 2 tubes		601-710	solution
RT Master mix with oligo $(dT)_{20}$	0.5 ml x 2 tubes		601-730	solution
RT Master mix with random hexamer	0.5 ml x 2 tubes		601-740	solution
RT Premix	96 tubes, 20 μℓ		601-602	solution
RT Premix with oligo $(dT)_{20}$	96 tubes, 20 μℓ		601-632	solution
RT Premix with random hexamer	96 tubes, 20 μℓ		601-642	solution
One-step RT-PCR Master mix	0.5 ml x 2 tubes		602-110	solution
One-step RT-PCR Premix	96 tubes, 20 μℓ		602-102	solution
First strand Synthesis Kit	50 reaction		601-005	solution
ZymAll™ RNase Inhibitor	10,000 U		609-010	solution
ZymAll™ RNase Inhibitor	4,000 U		609-004	solution
RealAmp™ *for PCR amplification*				
SYBR qPCR Master mix (2X, Low ROX)	200 rxn	20 μℓ	801-020	solution
	500 rxn	20 μℓ	801-050	
SYBR qPCR Master mix (2X, High ROX)	200 rxn	20 μℓ	801-021	solution
	500 rxn	20 μℓ	801-051	
Protein series				
ProtinEx™ Animal cell / tissue	100 ml		701-001	solution
PAGESTA™ Reducing 5X SDS-PAGE Sample Buffer	1 ml x 10 tubes		751-001	solution
STEADi™ *for automatic nucleic acid purification*				
12 Instrument			GST012	system
24 Instrument			GST024	system
Genomic DNA Cell / Tissue	96		401-104	kit
Genomic DNA Blood	96		402-105	kit
Total RNA	96		404-304	kit
Viral DNA / RNA	96		405-322	kit
CFC Seed DNA / RNA	96		406-C02	kit
Genomic DNA Plant	96		407-117	kit
Soil DNA	96		408-114	kit

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Customer & Technical Support
Do not hesitate to ask us any question.
We thank you for any comment or advice.

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