# GeneAll®

2012 / 2013 GeneAll

Innovative Life Science System

# GeneAll® Innovative Life Science System

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® Plasmid DNA Purification System

GeneAll® Plasmid DNA Purification Systems utilize glass microfiber membranes based on the modified alkaline lysis method. GeneAll® 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.

GeneAll® Exfection™ Plasmid LE (Low Endotoxin) and EF (Endotoxin-Free) kits 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.

## GeneAll® Fragment DNA Purification System

GeneAll® 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 90 %. 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 5 minutes.

## GeneAll® Genomic DNA Purification System

GeneAll® Exgene™ and GenEx™ series are designed for the purification of total DNA from a variety of sample sources. Exgene™ series provide fast and easy method in convenient spin or vacuum column format and are no need phenol extraction or alcohol precipitation.

GeneAll® GenEx™ series provide convenient, scalable purification method in the specially formulated buffer systems. Purified total DNA can be directly applicable in conventional PCR, real-time PCR, Southern blotting, genotyping, RFLP and other downstream applications.

GeneAll® DirEx™ can be conveniently used for preparation of the total DNA from various biological samples without the use of toxic chemical such as phenol or chloroform.

## GeneAll® RNA Purification System

GeneAll® 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™ 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™ provides the method for the isolation of genomic DNA and total RNA simultaneously from a single sample of tissue or cultured cells.

## GeneAll® PCR Amplification System

GeneAll® AmpONE™ PCR enzyme series are designed for various applications such as cloning, genotyping, sequencing, routine PCR, real-time PCR and long PCR. It is provided with HQ buffer for the amplification of a higher order structure. AmpONE™ Premix (lyophilized or solution form) and AmpMaster™ mix (2-fold liquid form) are provided with DNA polymerase, reaction buffer, dNTP and loading dye.

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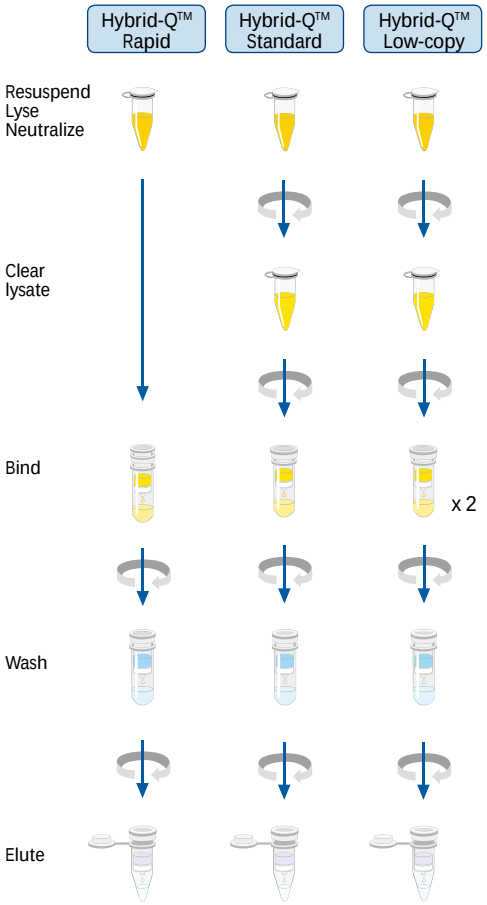
GeneAll® Exfection™

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

# 1. Plasmid DNA Purification System

# GeneAll® Hybrid-Q™ Plasmid Rapidprep

## Procedures




## Component list

GeneAll® SV column type Qf
EzClear™ filter
Collection tube
Buffer S1 - Cell Resuspension Buffer
Buffer S2 - Cell Lysis Buffer
Buffer G3 - Neutralization Buffer
Buffer AW - Column Wash Buffer A
Buffer PW - Column Wash Buffer P
Buffer EB - Elution Buffer
RNase A (20 mg/ml)
Protocol Handbook

## Description

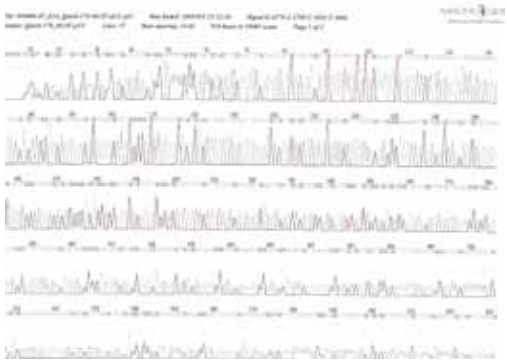
GeneAll® Hybrid-Q™ Plasmid Rapidprep kit provides two methods for easy and rapid preparation of plasmid DNA from the mini scale bacterial cells. Plasmid DNA can be prepared from up to 10 ml of overnight culture by conventional miniprep method with standard protocol. Alternatively, up to 3 ml of sample can be processed by rapid protocol in just 10 minutes 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 GeneAll® 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 minutes
- Stable and consistent result
- Instant use : No need of additional materials
- 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

## DNA Automated Sequencing Analysis



Plasmid DNA prepared using GeneAll® 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

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

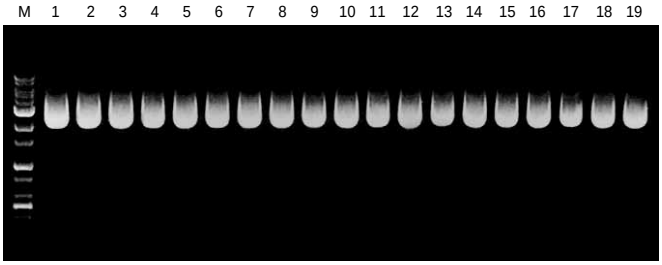
## Hybrid-Q™ Plasmid Rapidprep

| | |
|---|---|
| Format : | mini SV column type Qf, EzClear™ filter with 2.0 ml collection tubes |
| Recommended sample volume (High copy) : | 2 ~ 5 ml |
| Maximum sample volume (Low copy) : | 10 ml |
| Maximum loading volume of EzClear™ filter : | 600 μℓ |
| Maximum loading volume of spin column : | 800 μℓ |
| Binding capacity : | 30 μg |
| Recover rate : | 85 ~ 95 % |
| Minimum elution volume : | 40 μℓ |

**EzClear™ filter**

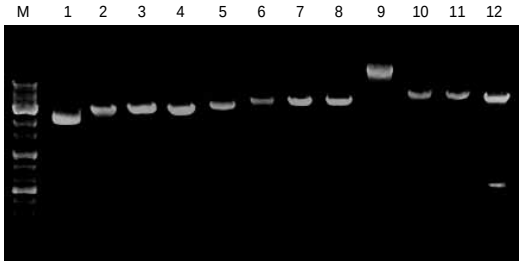
New patented EzClear™ filter column facilitates the clearance of the lysate by filtration instead of tedious centrifugation which has been used widely in traditional methods.
In the rapid protocol, EzClear™ filter column is assembled with GeneAll® spin column, and this column stack makes it one-step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

## Stable and Consistent Result




Plasmid DNA isolated from overnight cultures of pUC18-transformed DH5αF using **GeneAll®** Hybrid-Q™. Each lane represents 4 μℓ of purified supercoiled plasmid out of 50 μℓ of eluates.
M : 1 Kb ladder

## Enzyme Digestion



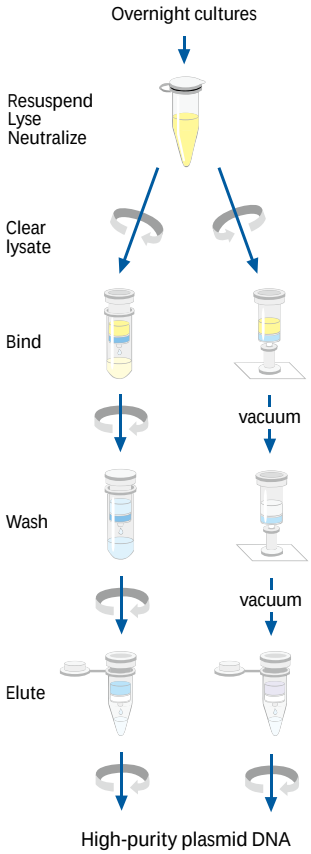

Several Kinds of plasmid DNA purified with **GeneAll®** Hybrid-Q™ subjected to digestion by restriction enzyme.
M : 1 Kb ladder
Lane 1 : pUC18, host DH10B
Lane 2 : pUC18, host DH10B, digested with EcoRI
Lane 3 : pUC18, host DH10B, digested with HindIII
Lane 4 : pUC18, host DH10B, digested with SmaI
Lane 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

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

# GeneAll® Exprep™ Plasmid SV

## Procedures

in microcentrifuges | on vacuum manifolds




## Component list

**GeneAll®** SV column type Q
Collection tube
Buffer S1 - Cell Resuspension Buffer
Buffer S2 - Cell Lysis Buffer
Buffer S3 - Neutralization Buffer
Buffer AW - Column Wash Buffer A
Buffer PW - Column Wash Buffer P
Buffer EB - Elution Buffer
MixVu™ Solution
RNase A (20 mg/ml)
Protocol Handbook

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

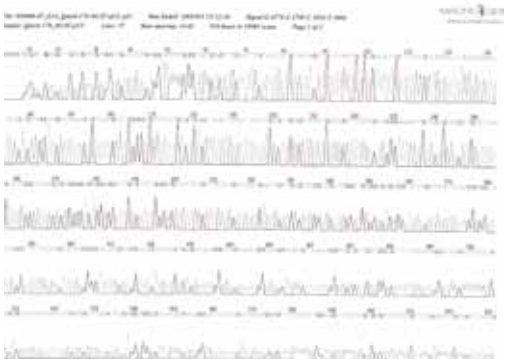
## Description

**GeneAll®** 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. **GeneAll®** Exprep™ Plasmid SV eliminates the need of organic solvent extraction and alcohol precipitation, allowing rapid and convenient preparation from many samples simultaneously. **GeneAll®** 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
- Instant use : No need of additional materials
- Fast and simple procedure : complete in 25 minutes
- High purity : $A_{260/280}$ = 1.8 ~ 2.0
- Compatible with $endA^+$ strains
- No use of organic solvents
- Ready for use in enzymatic manipulation and automated sequencing

## DNA Automated Sequencing Analysis

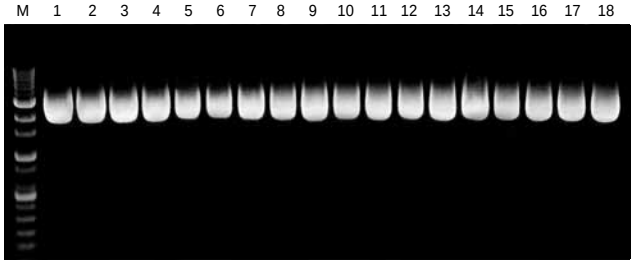


Plasmid DNA prepared using **GeneAll®** Plasmid SV kit delivers long, accurate (> 99 % at 700 bp) reads.
* Sequencing analysis was performed on an ABI Prism™, model 377, version 3.2 sequencer

# For the purification of plasmid DNA

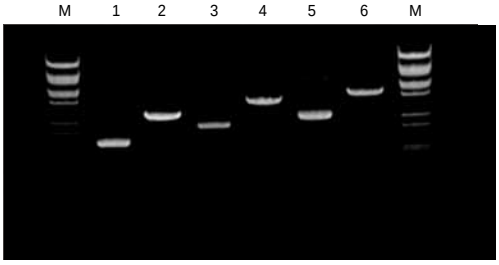
| | Exprep™ Plasmid SV mini | Exprep™ Plasmid SV Midi |
|---|---|---|
| Format : | mini SV column type Q with 2.0 ml collection tubes | Midi SV column type Q with 50 ml collection tubes |
| Sample size : | Up to 10 ml LB | Up to 100 ml LB |
| Preparation time : | 25 ~ 30 min | 50 ~ 60 min |
| Typical yield : | 10 ~ 30 μg | 100 ~ 300 μg |
| Elution volume : | 30 ~ 200 μℓ | 400 ~ 2000 μℓ |

## Stable and Consistent Result




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

## Enzyme Digestion




Several kinds of plasmid DNA purified with **GeneAll**® Exprep™ Plasmid SV kit were subjected to digestion by restriction enzyme.
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

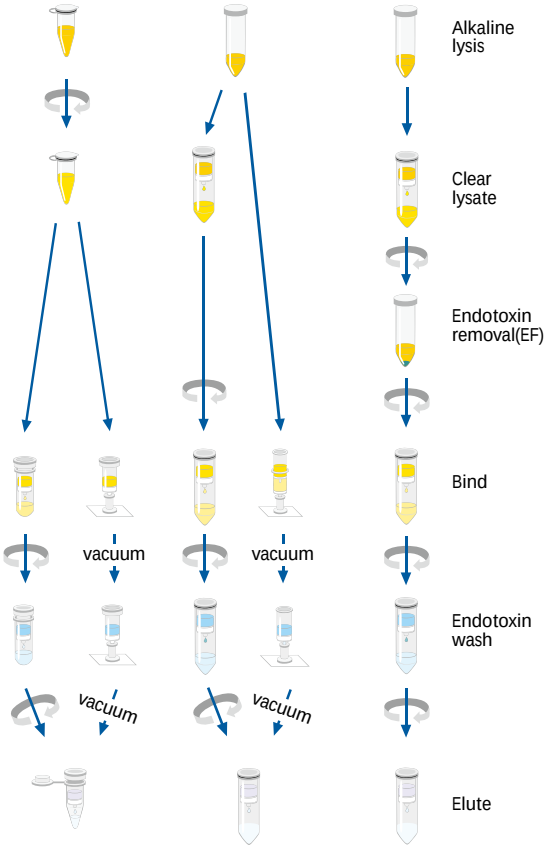
| Products | Type | Size | Cat. No. |
|---|---|---|---|
| **GeneAll® Exprep™** Plasmid SV | mini / spin / vacuum | 50 | 101-150 |
| **GeneAll® Exprep™** Plasmid SV | mini / spin / vacuum | 200 | 101-102 |
| **GeneAll® Exprep™** Plasmid SV | Midi / spin / vacuum | 26 | 101-226 |
| **GeneAll® Exprep™**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

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

# GeneAll® Exfection™ Plasmid LE / EF

## Procedures

Exfection™ LE mini | Exfection™ LE Midi | Exfection™ EF Midi




## Component list

GeneAll® SV column type Qe / E
EzClear™ Midi filter
Collection tube
Buffer P1
Buffer P2
Buffer G3 / P3
Buffer EW1
Buffer EW2
Buffer ER
Buffer EG
Buffer EF
MixVu™ Solution
RNase A (20 mg/ml)
Protocol Handbook

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

## Description

GeneAll® 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.

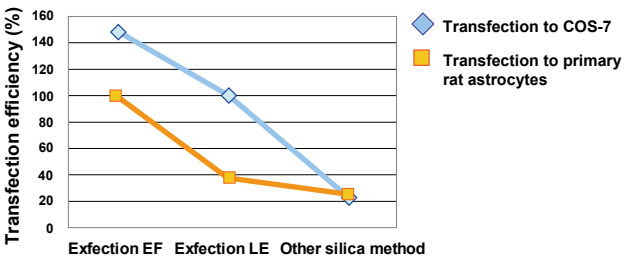
It is a common contaminant in plasmid preparations and can significantly reduce transfection efficiencies, if not removed during DNA preparations. These kits use two methods for the removal of endotoxins: advanced phase separation and endotoxin removal washing. Endotoxin levels can be reduced to 0.1 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 need of additional materials
- No use of organic solvents

## 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.

# For the preparations of extremely pure plasmid DNA

| | Exfection™ Plasmid LE mini | Exfection™ Plasmid LE Midi | Exfection™ Plasmid EF Midi |
|---|---|---|---|
| Format : | Mini column type Qe with 2 ml collection tubes | Midi column type E with 50 ml collection tubes | Midi column type E with 50 ml collection tubes |
| Recommended sample volume : | 5 ~ 10 ml LB | 50 ~ 100 ml LB | 30 ~ 150 ml LB |
| Method of lysate clearing : | Centrifugation | EzClear™ Midi filter | EzClear™ Midi filter |
| Preparation time : | < 30 min | < 50 min | < 70 min |
| Binding capacity : | 30 μg | 300 μg | 300 μg |
| Endotoxin levels : | < 10 EU/μg | < 10 EU/μg | < 0.1 EU/μg |
| Minimum elution volume : | 50 μℓ | 500 μℓ | 500 μℓ |
| Applications : | Cell transfection of most cell lines<br>Enzymatic modifications<br>Library construction<br>in vitro transcription/translation<br>High quality sequencing<br>Cloning<br>Most molecular biological experiments | | In addition to LE series;<br>Cell transfection of primary, sensitive and/or suspension cell lines<br>Gene silencing<br>Microinjection |

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

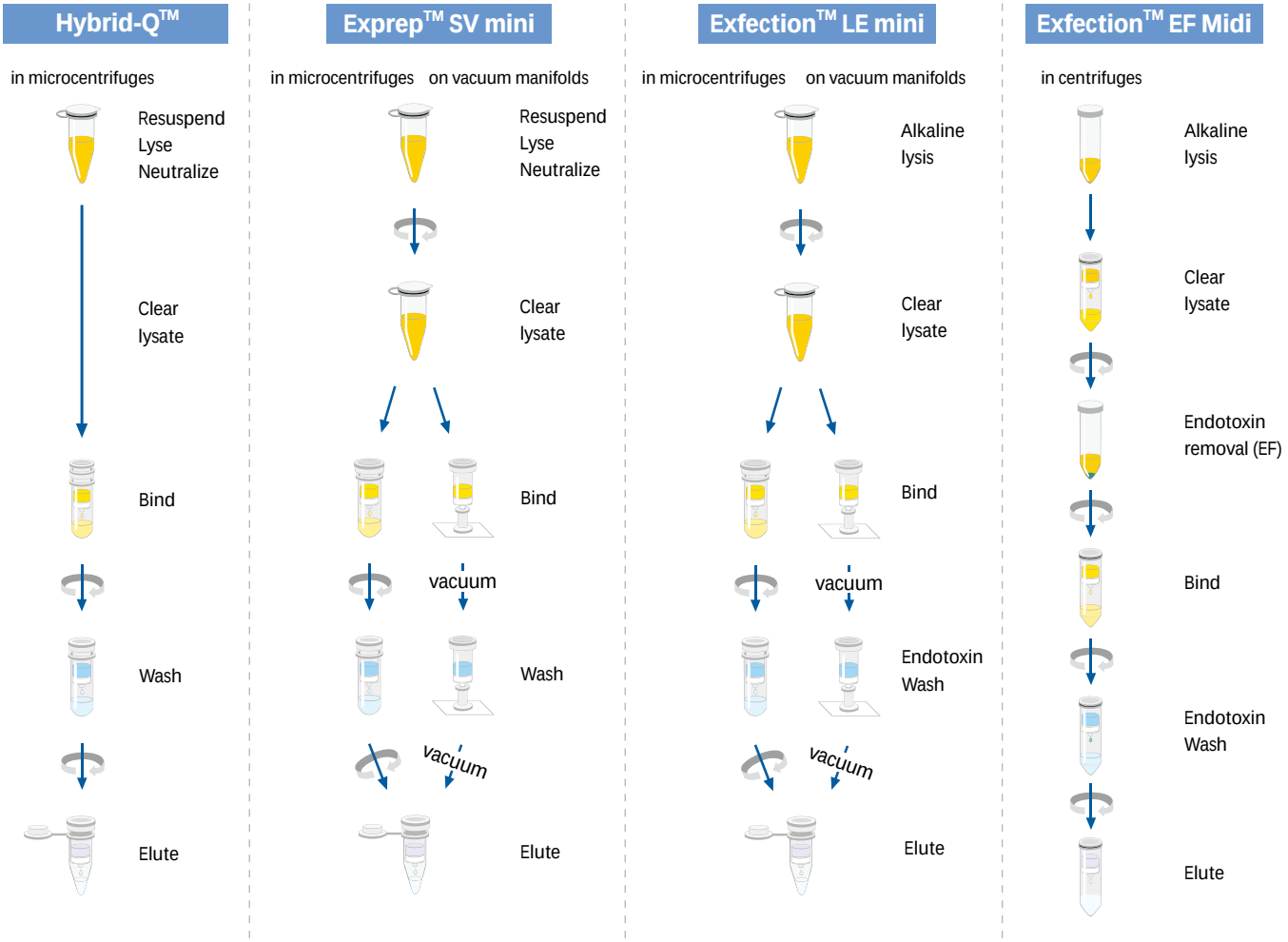
* Midi kit contains indicator "MixVu™" for successful alkaline lysis.

## 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. GeneAll® 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.

GeneAll® 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.



# Hybrid-Q™ / Exprep™ / Exfection™ Series

| | 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)** |
|---|---|---|---|---|---|---|
| | Small Scale | | | Large Scale | | |
| **Specifications** | | | | | | |
| Format | Spin / Vacuum | 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 | 50 μℓ | 50 μℓ | 500 μℓ | 500 μℓ | 500 μℓ |
| **Applications** | | | | | | |
| Endotoxin free | - | - | - | - | - | ■ |
| Cell transfection | □ | □ | ■ | □ | ■ | ■ |
| in vitro Transcription | ■ | ■ | ■ | ■ | ■ | ■ |
| Cloning | ■ | ■ | ■ | ■ | ■ | ■ |
| Automatic sequencing | ■ | ■ | ■ | ■ | ■ | ■ |
| PCR | ■ | ■ | ■ | ■ | ■ | ■ |
| Restriction digestion | ■ | ■ | ■ | ■ | ■ | ■ |
| Transformation | ■ | ■ | ■ | ■ | ■ | ■ |

* 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 xg at least.

GeneAll® Expin™

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

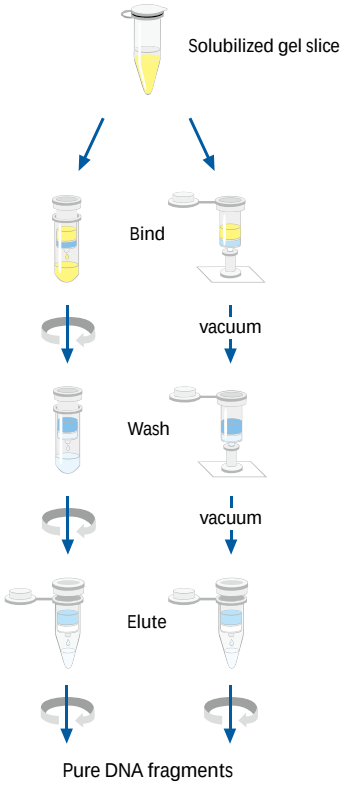
# 2. Fragment DNA Purification System

# GeneAll® Expin™ Gel SV

For gel extraction of
DNA fragments from agarose gel

## Procedures

in microcentrifuges | on vacuum manifolds




## Component list

GeneAll® SV column type D
Collection tube
Buffer GB - Gel Extraction Buffer
Buffer NW - Column Wash Buffer N
Buffer EB - Elution Buffer
Protocol Handbook

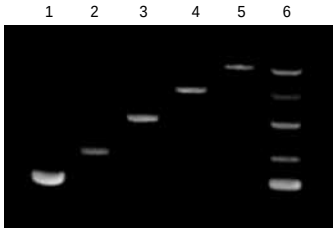
## Description

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. **GeneAll®** 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 90 %.

## Features and Benefits

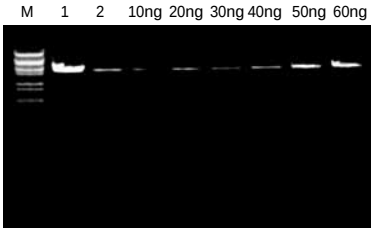
- Spin or vacuum column format
- DNA extraction from standard and low-melting agarose (TAE, TBE)
- Stable and consistent result
- Rapid and convenient procedure
- Instant use : No need of additional materials
- High purity : 1.8 ~ 2.0
- Yield : 70 ~ 85 % average (80 bp ~ 10 kb)
- No use of organic solvents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

## High recoveries from gels




DNA fragments resolved on 1 % agarose gel in TAE buffer.
Lane 1 ~ 5 : Before extraction with the **GeneAll®** 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)

## Extraction efficiency




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 90 %. Samples were run on 1 % TAE agarose gel.
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 %)

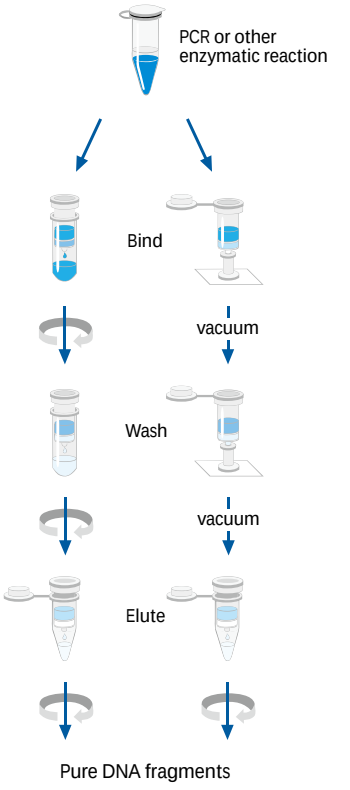
| Products | Type | Size | Cat. No. |
|---|---|---|---|
| **GeneAll® Expin™** Gel SV | mini / spin / vacuum | 50 | 102-150 |
| **GeneAll® Expin™** Gel SV | mini / spin / vacuum | 200 | 102-102 |

# GeneAll® Expin™ PCR SV

For the purification of DNA from PCR or other enzymatic reactions

## Procedures

in microcentrifuges | on vacuum manifolds




## Component list

GeneAll® SV column type D
Collection tube
Buffer PB - PCR Purification Buffer
Buffer NW - Column Wash Buffer N
Buffer EB - Elution Buffer
Protocol Handbook

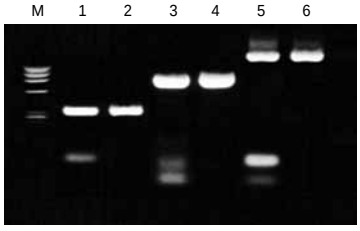
## Description

GeneAll® 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

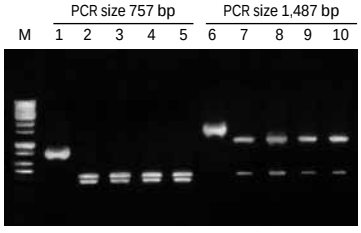
- Spin or vacuum column format
- Remove PCR primers and contaminants
- Stable and consistent result
- Fast and simple : completed just in 5 minutes
- Instant use : No need of additional materials
- High purity : 1.8 ~ 2.0
- Yield : 90 ~ 95 % average (100 bp ~ 10 kb)
- No use of organic solvents
- Applied directly in ligation, automated sequencing, restriction enzyme assay, PCR, in vitro transcription, hybridization, microarray assay and other enzymatic reactions

## Complete primer removal after PCR




PCR products which has several length of fragment were purified with GeneAll® 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).
M : phi-x174-HaeIII

## Extraction efficiency




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

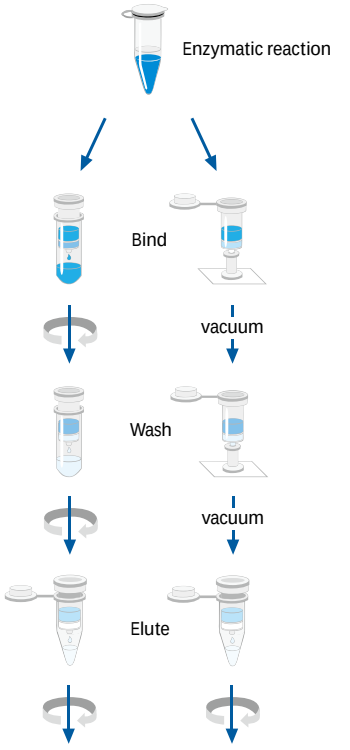
| Products | Type | Size | Cat. No. |
|---|---|---|---|
| GeneAll® Expin™ PCR SV | mini / spin / vacuum | 50 | 103-150 |
| GeneAll® Expin™ PCR SV | mini / spin / vacuum | 200 | 103-102 |

# GeneAll® Expin™ CleanUp SV

For oligonucleotide and DNA cleanup from enzymatic reactions

## Procedures

in microcentrifuges | on vacuum manifolds




## Component list

GeneAll® SV column type D
Collection tube
Buffer NR - DNA Clean Up Buffer
Buffer NW - Column Wash Buffer N
Buffer EB - Elution Buffer
Protocol Handbook

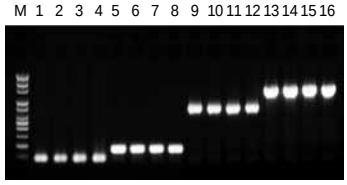
## Description

GeneAll® 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 5 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

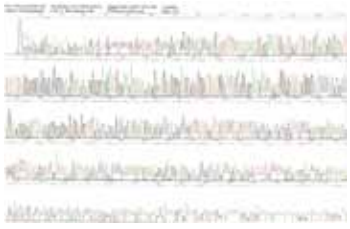
- Spin or vacuum column format
- Stable and consistent result
- Fast and simple : completed just in 5 minutes
- Instant use : No need of additional materials
- High purity : 1.8 ~ 2.0
- Yield : 80 ~ 95 % (40 bp ~ 10 kb)
- No use of organic solvents
- Applied directly in ligation, automated sequencing, 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 GeneAll® 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 1, 5, 9, 13 : before purification
M : 1 kb ladder

## DNA Automated Sequencing Analysis



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

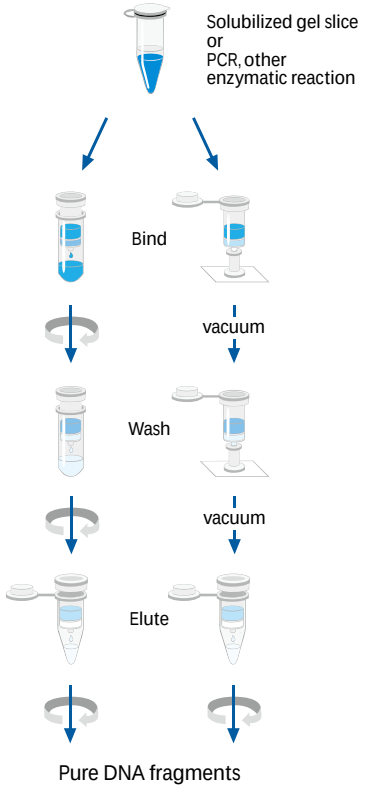
| Products | Type | Size | Cat. No. |
|---|---|---|---|
| GeneAll® Expin™ CleanUp SV | mini / spin / vacuum | 50 | 113-150 |
| GeneAll® Expin™ CleanUp SV | mini / spin / vacuum | 200 | 113-102 |

# GeneAll® Expin™ Combo GP

Combined kit of
Expin™ Gel SV and PCR SV

## Procedures

in microcentrifuges | on vacuum manifolds




## Component list

GeneAll® SV column type D
Collection tube
Buffer GB - Gel Extraction Buffer
Buffer PB - PCR Purification Buffer
Buffer NW - Column Wash Buffer N
Buffer EB - Elution Buffer
Protocol Handbook

## Description

GeneAll® 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 and vacuum format - rapid and convenient procedure
- DNA purification from agarose gel and enzymatic reactions
- Stable and consistent result
- High yield and purity
- Instant use : No need of additional materials
- 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 |

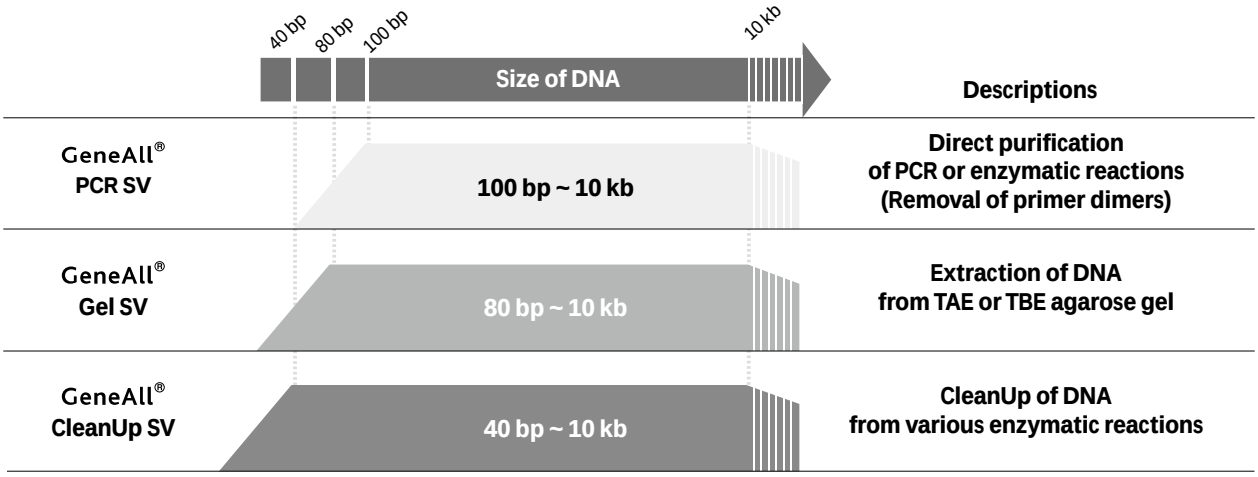
Average recovery rates of GeneAll® Expin™ SV kit with various sizes of DNA. 3 μg of starting sample was purified and eluted with 50 μℓ of buffer EB. Optional steps were not performed and SV columns were incubated for 1 minute after addition of buffer EB.

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

## For Fragment DNA Purification

# Expin™ Series

GeneAll® 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 90 %. 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 5 minutes.




* GeneAll® 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<br>200 mg Gel slice |
| Fragment DNA size | 100 bp ~ 10 kb | 80 bp ~ 10 kb | 40 bp ~ 10 kb | 80 bp ~ 10 kb |
| Recovery | 90 ~ 95 % | 70 ~ 85 % | 80 ~ 95 % | 70 ~ 95 % |
| Maximum binding capacity | 10 μg | 10 μg | 10 μg | 10 μg |
| Preparation time | < 5 min | < 15 min | < 5 min | < 5 min ~ 15 min |
| **Applications** | | | | |
| PCR cleanup | ■ | - | □ | ■ |
| Gel extraction | - | ■ | - | ■ |
| Nucleotide removal | □ | □ | ■ | □ |

■ Recommended / □ Suitable but not optimized

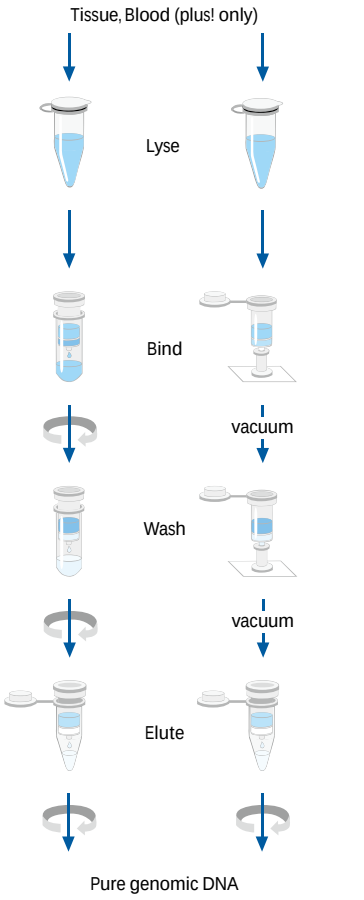
* Expin™ Combo GP kit is the combined product of Expin™ Gel SV and Expin™ PCR SV.

# 3. Genomic DNA Purification System

# GeneAll® Exgene™ Tissue SV (plus!)

## Procedures

in microcentrifuges | on vacuum manifolds




## Component list

GeneAll® SV column type G
Collection tube
Additional collection tube
Buffer RL - RBC Lysis Buffer (plus! only)
Buffer TL - Tissue Lysis Buffer
Buffer TB - Tissue Binding Buffer
Buffer BW - Column Wash Buffer B
Buffer TW - Column Wash Buffer T
Buffer AE - Elution Buffer
Proteinase K (20 mg/ml)
Protocol Handbook

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

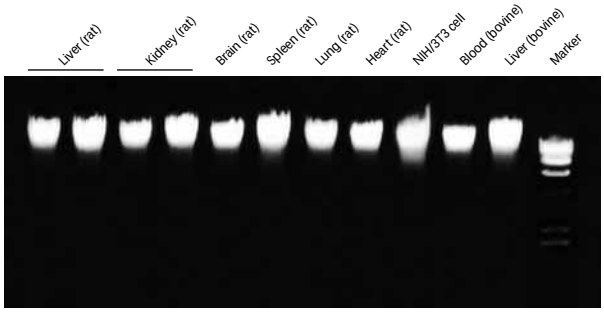
## Description

GeneAll® 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. If RNA-free genomic DNA is required, RNase A can be treated with. 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)
- Instant use : No need of additional materials
- Simple and safe procedure
- High purity : 1.8 ~ 2.0
- No use of organic solvents
- Ready for use in PCR, southern blotting, AFLP, RFLP, RAPD and other enzymatic reactions

## DNA Extraction from various samples

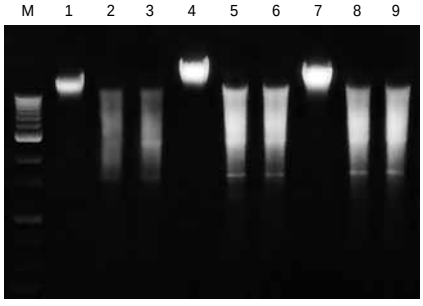



DNA purification using GeneAll® Exgene™ Tissue SV kit. DNA from several kinds of animal tissue was prepared. Elution was performed with 100 μℓ of Buffer AE. 8 μℓ of eluates was resolved on 0.8 % agarose gel.

# For the isolation of gDNA from tissues, cells and whole blood (plus!)

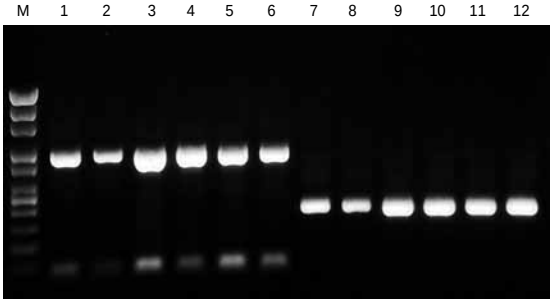
| | Exgene™ Tissue SV (plus!) mini | Exgene™ Tissue SV (plus!) Midi | Exgene™ Tissue SV (plus!) MAXI |
|---|---|---|---|
| Format : | mini SV column type G with 2.0 ml collection tubes | Midi SV column type G with 15 ml collection tubes | MAXI SV column type G with 50 ml collection tubes |
| Sample size : | Up to 25 mg tissue | Up to 100 mg tissue | Up to 250 mg tissue |
| Preparation time : | 25 ~ 220 min | 40 ~ 250 min | 40 ~ 250 min |
| Typical yield : | 5 ~ 50 μg | 20 ~ 150 μg | 80 ~ 400 μg |
| Elution volume : | 30 ~ 400 μℓ | 200 ~ 600 μℓ | 400 ~ 2000 μℓ |

## Restriction Enzyme Assay




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

## PCR Amplification

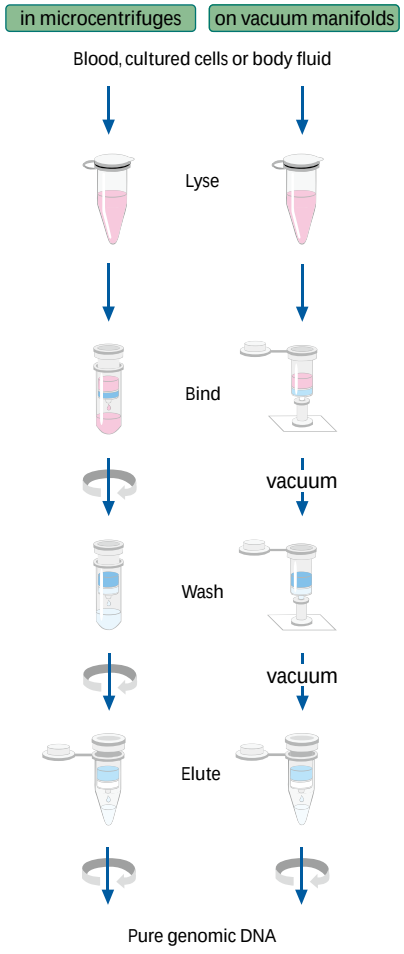



PCR reaction was performed with purified DNA using **GeneAll®** Exgene™ Tissue SV kit. Template was isolated from rat liver (Lane 1 ~ 2, 7 ~ 8), spleen (Lane 3 ~ 4, 9 ~ 10) and kidney (Lane 5 ~ 6, 11 ~ 12).
M : 1 kb ladder

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

# GeneAll® Exgene™ Blood SV

## Procedures




## Component list

GeneAll® SV column type G
Collection tube
Additional collection tube
Buffer BL - Blood Lysis Buffer
Buffer BW - Column Wash Buffer B
Buffer TW - Column Wash Buffer T
Buffer AE - Elution Buffer
Proteinase K (20 mg/ml)
Protocol Handbook

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

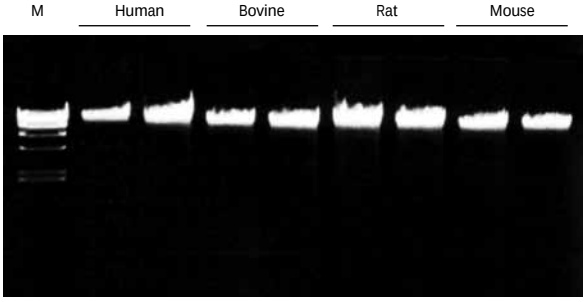
## Description

GeneAll® 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
- Instant use : No need of additional materials
- 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

## DNA Extraction from various samples

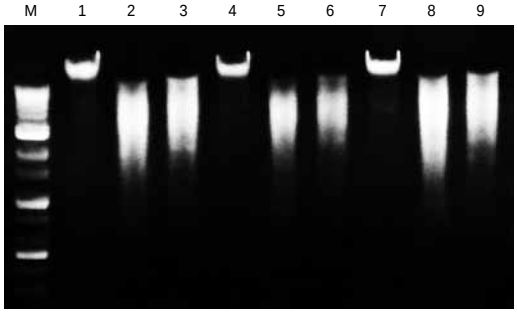



Total DNA was isolated from 200 μl of whole blood of various species using GeneAll® Blood SV mini kit. Each lane represents 8 μl of 100 μl eluates.
M : Lambda-HindIII

# For the purification of gDNA from blood and its derivatives

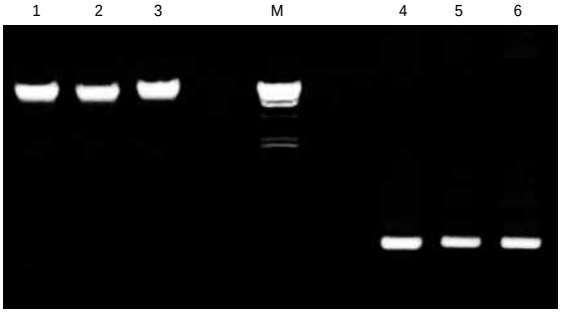
| | Exgene™ Blood SV mini | Exgene™ Blood SV Midi | Exgene™ Blood SV MAXI |
|---|---|---|---|
| Format : | mini SV column type G with 2.0 ml collection tubes | Midi SV column type G with 15 ml collection tubes | MAXI SV column type G with 50 ml collection tubes |
| Sample size : (Whole blood) | Up to 200 μℓ | 1 ~ 2 ml | 3 ~ 10 ml |
| Preparation time : | 20 ~ 30 min | 40 ~ 55 min | 40 ~ 55 min |
| Typical yield : | 4 ~ 20 μg | 20 ~ 80 μg | 80 ~ 400 μg |
| Elution volume : | 30 ~ 400 μℓ | 200 ~ 600 μℓ | 400 ~ 2000 μℓ |

## Restriction Enzyme Assay




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

## PCR Amplification

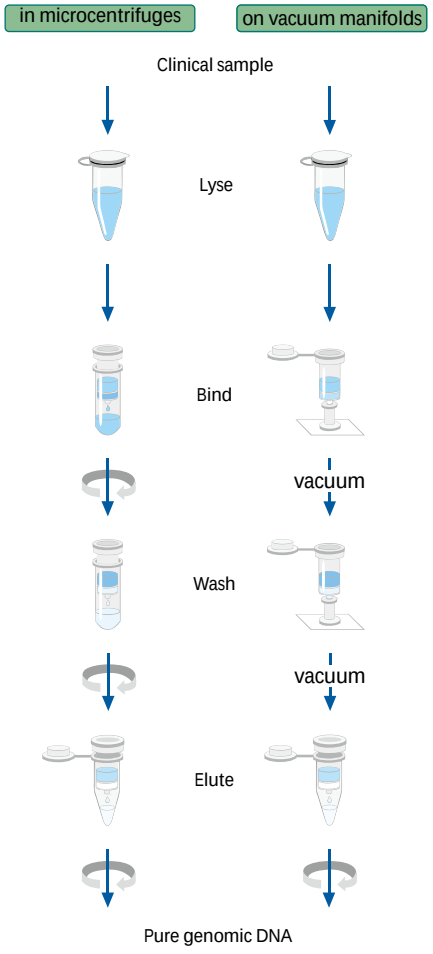



PCR reaction was performed with purified DNA using **GeneAll®** Exgene™ Blood SV kit as template. Each lane 1, 2 and 3 corresponds to the template of each PCR product (Lane 4, 5, 6). Template DNA was isolated from whole blood of rat (SD) and the exon region of GAPDH gene was amplified with Taq polymerase.

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

# GeneAll® Exgene™ Clinic SV

## Procedures




## Component list

GeneAll® SV column type G
Collection tube
Buffer CL - Cell Lysis Buffer
Buffer BL - Blood Lysis Buffer
Buffer BW - Column Wash Buffer B
Buffer TW - Column Wash Buffer T
Buffer AE - Elution Buffer
Proteinase K (20 mg/ml)
Protocol Handbook

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

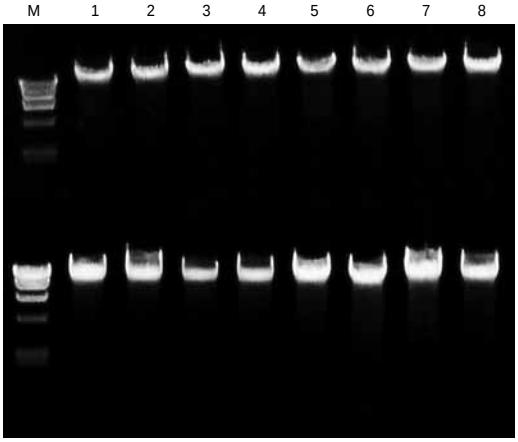
## Description

GeneAll® 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

- Easy and fast purification of high-quality DNA
- Spin and vacuum format
- Instant use : No need of additional materials
- 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.

## Consistent Result from various sample




Total DNA purified from various sample tissue using GeneAll® Exgene™ Clinic SV mini is resolved on 0.8 % agarose gel.
M : Lambda-HindIII

## For the isolation of gDNA from clinical tissues including whole blood

| | Exgene™ Clinic SV mini | Exgene™ Clinic SV Midi | Exgene™ Clinic SV MAXI |
|---|---|---|---|
| Format : | mini SV column type G with 2.0 ml collection tubes | Midi SV column type G with 15 ml collection tubes | MAXI SV column type G with 50 ml collection tubes |
| Sample size : | Up to 20 mg* | Up to 100 mg* | Up to 250 mg* |
| Preparation time : | 25 ~ 220 min* | 40 ~ 250 min* | 40 ~ 250 min* |
| Typical yield : | 5 ~ 50 μg | 20 ~ 150 μg | 80 ~ 400 μg |
| Elution volume : | 30 ~ 400 μℓ | 200 ~ 600 μℓ | 400 ~ 2000 μℓ |

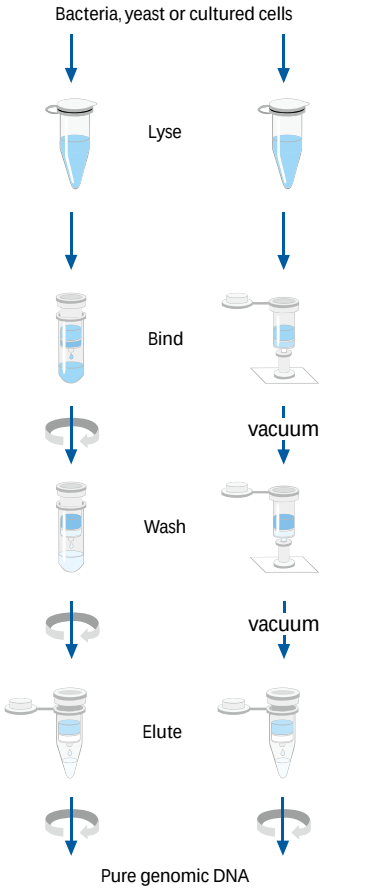
* Depending on the sample used.

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

# GeneAll® Exgene™ Cell SV

## Procedures

in microcentrifuges | on vacuum manifolds




## Component list

GeneAll® SV column type G
Collection tube
Buffer GP - Enzyme Reaction Buffer
Buffer YL - Lyticase Reaction Buffer
Buffer CL - Cell Lysis Buffer
Buffer BL - Blood Lysis Buffer
Buffer BW - Column Wash Buffer B
Buffer TW - Column Wash Buffer T
Buffer AE - Elution Buffer
Proteinase K (20 mg/ml)
Protocol Handbook

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

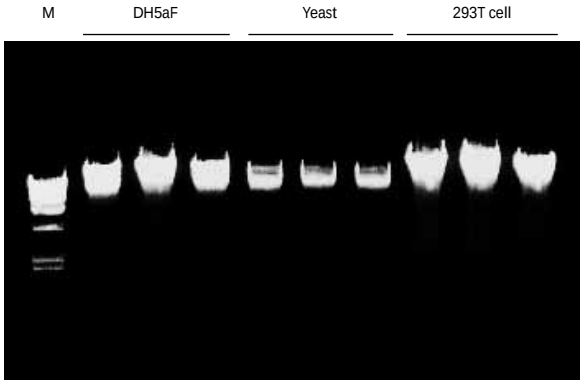
## Description

GeneAll® 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 10 ~ 40 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

## Consistent Result from various samples



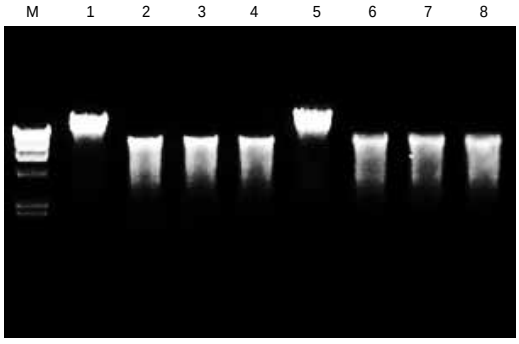

Genomic DNA prepared from a several species of cells using GeneAll® Exgene™ Cell SV kit. 5 μℓ out of 100 μℓ eluate was resolved on 0.8 % agarose gel.
M : Lambda-HindIII

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

| | Exgene™ Cell SV mini | Exgene™ Cell SV MAXI |
|---|---|---|
| Format : | mini SV column type G with 2.0 ml collection tubes | MAXI SV column type G with 50 ml collection tubes |
| Sample size : | Up to 2 x $10^9$ bacterial cells<br>Up to 5 x $10^7$ yeast cells | Up to 2 x $10^{10}$ bacterial cells<br>Up to 5 x $10^8$ yeast cells |
| Preparation time : | 30 ~ 120 min* | 60 ~ 240 min* |
| Typical yield : | 10 ~ 50 μg | 80 ~ 400 μg |
| Elution volume : | 30 ~ 400 μℓ | 400 ~ 2000 μℓ |

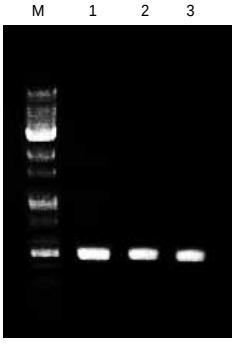
* Depending on the sample used.

## Restriction Enzyme Assay




Genomic DNA purified from E. coli DH5αF and JB6 samples using **GeneAll®** Exgene™ Cell SV kit was partially digested with BamHI (Lane 2 ~ 4, 6 ~ 8). Lane 1, 5 represent undigested DNA.
M : Lambda-HindIII

## PCR Amplification



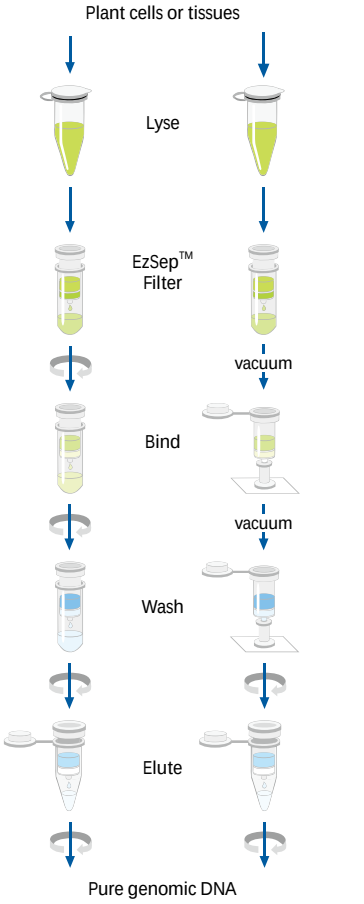

PCR reaction was performed with purified DNA using **GeneAll®** Exgene™ Cell SV kit. Template DNA was isolated from E. coli DH5αF (Lane 1, 2, 3).
PCR reaction was performed with genomic DNA purified from DH5αF using **GeneAll®** Cell SV kit.
M : Lambda-HindIII

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

# GeneAll® Exgene™ Plant SV

## Procedures

in microcentrifuges | on vacuum manifolds




## Component list

GeneAll® SV column type G
Collection tube
EzSep™ filter column
Collection tubes
Buffer PL - Plant Lysis Buffer
Buffer PD - Precipitation Buffer
Buffer BD - Binding Buffer
Buffer CW - Column Wash Buffer C
Buffer AE - Elution Buffer
RNaseA (100 mg/ml)
Protocol Handbook

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

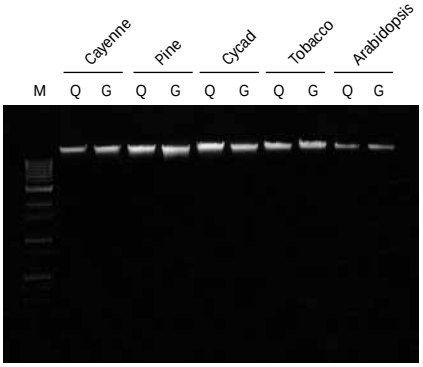
## Description

GeneAll® 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 GeneAll® 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 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
- Instant use : No need of additional materials
- Perfect removal of second metabolites such as polyphenols and polysaccharides
- Simple procedure by the use of EzSep™ filter column
- No use of organic solvents
- Ready for use in PCR, Southern blotting, AFLP, RFLP, RAPD and other enzymatic reactions

## Comparison of DNA Extraction with supplier Q

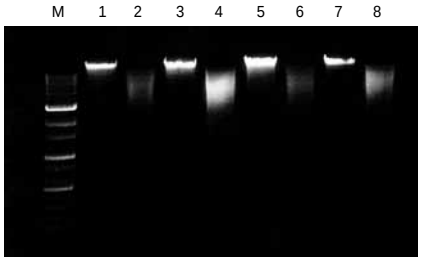



Genomic DNA was extracted from each 100 mg of various samples and analyzed on 0.8 % agarose gel. To compare with supplier Q, same kind and amount of each plant samples were subjected to extraction.
Q : supplier Q, G : GeneAll® Exgene™ Plant SV kit.
M : 1 kb ladder

# For the isolation of gDNA from plant cells and tissues

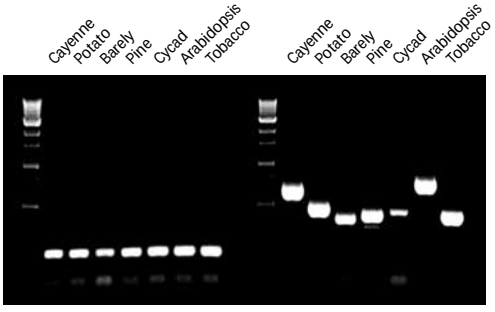
| | Exgene™ Plant SV mini | Exgene™ Plant SV Midi | Exgene™ Plant SV MAXI |
|---|---|---|---|
| Format : | mini SV column type G with 2.0 ml collection tubes | Midi SV column type G with 15 ml collection tubes | MAXI SV column type G with 50 ml collection tubes |
| Sample size : | Up to 100 mg wet (30 mg dry) | Up to 400 mg wet (100 mg dry) | Up to 1 g wet (300 mg dry) |
| Preparation time : | < 40 min | < 1 hour | < 1 hour |
| Typical yield : | 4 ~ 40 μg | 10 ~ 150 μg | 40 ~ 300 μg |
| Elution volume : | 30 ~ 400 μℓ | 200 ~ 600 μℓ | 400 ~ 2000 μℓ |

## Restriction Enzyme Assay




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

## PCR Amplification

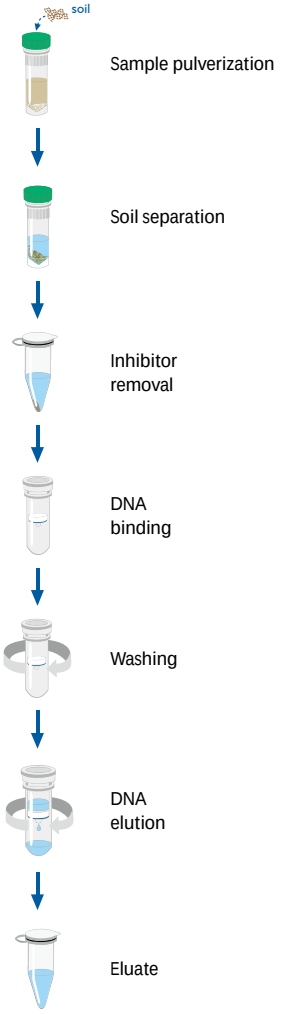



PCR reaction was performed with purified DNA using **GeneAll®** Exgene™ Plant SV kit. Two primer sets were used : trnL region (left lanes) and large subunit rDNA region on plasmid

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

# GeneAll® Exgene™ Soil DNA mini

## Procedures




## Component list

GeneAll® Column type G
(with collection tube)
1.5 ml collection tube
2.0 ml collection tube
Buffer SL
Buffer RH
Buffer PD
Buffer TB
Buffer NW
Buffer EB
Powerbead™ tube
Protocol Handbook

## Description

GeneAll® Exgene™ Soil DNA mini 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 is a sort of brownish colour, is a critical factor for soil treating experiments. If remained in eluate, this can have a negative effect on the DNA downstream applications.
GeneAll® 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
- Sample size : Up to 500 mg
- Easy and fast purification of high-quality DNA
- Preparation time : ~ 25 minutes
- 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

# For the isolation of gDNA from soil samples

## Exgene™ Soil DNA mini

Format : mini SV column type G with 2.0 ml collection tubes

Sample size : Up to 500 mg

Preparation time : ~ 25 min

Elution volume : 30 ~ 200 μℓ

## Comparative Genomic DNA purification result

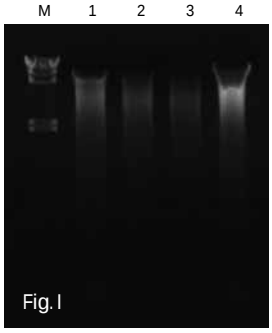
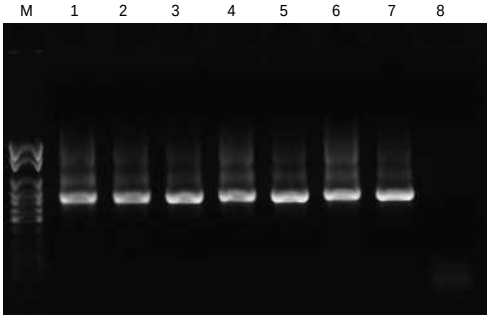


Fig. I

Fig. II

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 result



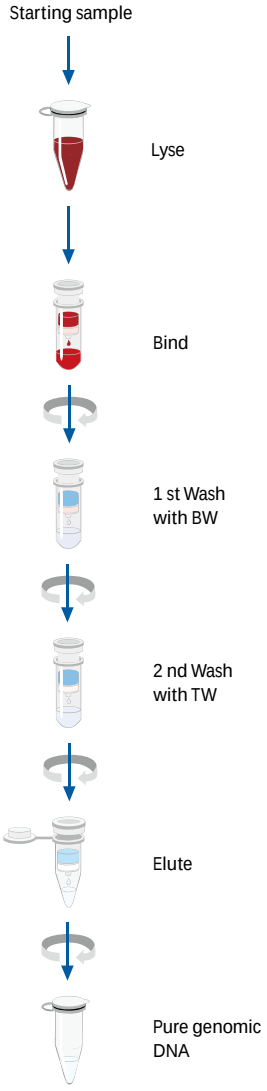

gDNA was purified from various soil samples using Exgene™ Soil DNA mini.
And then, the 16s rRNA was amplified by PCR and confirmed by electrophoresis.

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

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

# GeneAll® Exgene™ Genomic DNA micro

## Procedures




## Component list

GeneAll® Micro column type S
Collection tube
Buffer CL - Lysis Buffer I
Buffer BL - Lysis Buffer II
Buffer BW - Column Wash Buffer B
Buffer TW - Column Wash Buffer T
Buffer AE - Elution Buffer
Carrier RNA
Proteinase K
PK Storage Buffer
Protocol Handbook

## Description

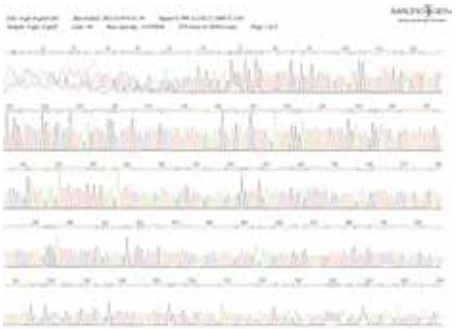
GeneAll® Exgene™ Genomic DNA micro kit provides fast and easy methods for the micro scale purification of total (genomic and mitochondrial) DNA from various biological samples. Purified DNA can be used directly for PCR, quantitative PCR, genotyping such as STR analysis and other downstream applications.

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
- Apply to trace of sample : use of micro column
- Simple and safe procedure
- Stable and consistent result
- Instant use : No need of additional materials
- No use of organic solvents
- High yield and purity
- Various protocol for forensic sample : stain, chewing gum, cigarette butts, tooth brush
- Ready for use in general PCR, qPCR, genotyping such as STR analysis and other downstream applications

## Stable and Consistent Result



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

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

## Exgene™ Genomic DNA micro

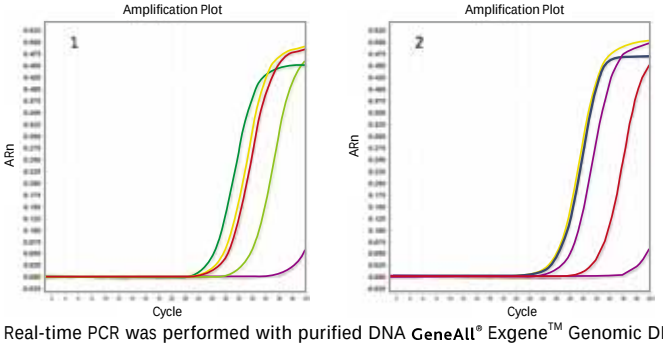
Format : Micro column type S with 2.0 ml collection tubes

Sample size : Up to 100 μℓ whole blood

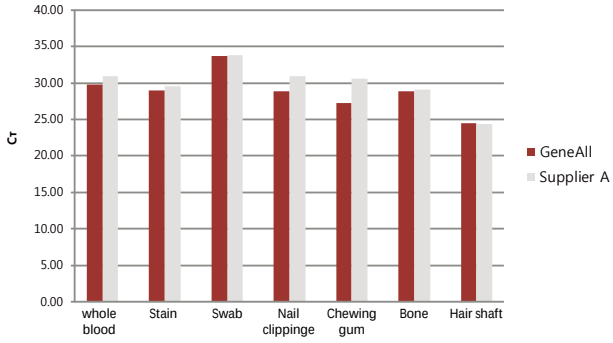
Preparation time : After lysis, 20 min

Elution volume : 20 ~ 50 μℓ

## Real-Time PCR Amplification

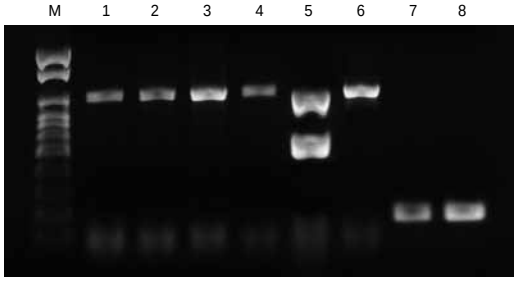



Real-time PCR was performed with purified DNA GeneAll® Exgene™ Genomic DNA micro kit. The DNA was extracted from whole blood, stains, swab and hair root (Panel 1), nail clippings, chewing gum, tooth brush and urine (Panel 2). Real-time PCR was carried out with human GAPDH primer sets and detected by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




DNA extraction from various biological samples using GeneAll® 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



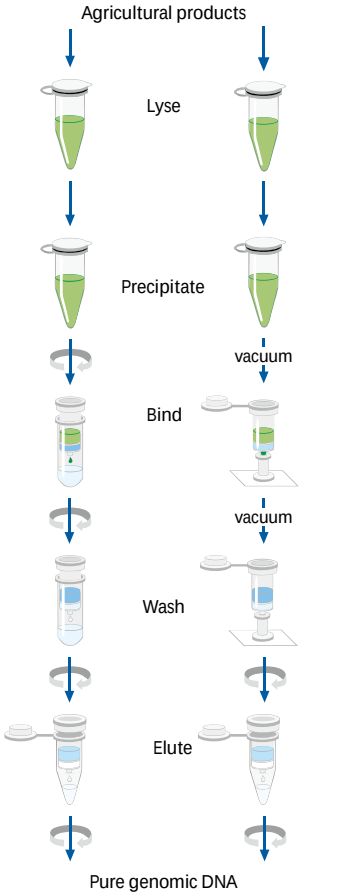

PCR reaction was performed with purified DNA using GeneAll® Exgene™ Genomic DNA micro kit. Template was isolated from whole blood (Lane 1), dried blood spot (Lane 2), hair root (Lane 3), chewing gum (Lane 4), animal tissue (Lane 5), urine (Lane 6), bone (Lane 7) and hair shaft (Lane 8). M: 1 kb ladder

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

# GeneAll® Exgene™ GMO SV

## Procedures

in microcentrifuges | on vacuum manifolds




## Component list

GeneAll® SV column type S
Collection tube
Buffer GL - GMO Lysis Buffer
Buffer MP - GMO Protein Precipitation Buffer
Buffer MB - GMO Binding Buffer
Buffer GW - Column Wash Buffer G
Buffer EB - Elution Buffer
Protocol Handbook

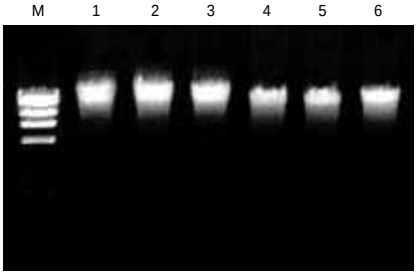
## Description

GeneAll® GMO SV kit provides fast and convenient methods for the isolation of genomic DNA from the crops or its processed food such as soybean, maize, rice, barely, soybean paste, bean curd, snacks and etc. Up to 300 mg of crop can be processed with this kit in just an hour, depending on the lysis conditions. Phenol / chloroform extraction, alcohol precipitation and cold conditions are not required. Without any further manipulations, purified DNA is ready for the conventional and real-time PCR for the detection of GMO (genetically modified organism).

## Features and Benefits

- Spin or vacuum column format
- Accurate and consistent DNA extraction from 300 mg of various grains or its processed food
- Fast and simple procedure
- No organic extraction or alcohol precipitation
- High purity : ready for the conventional and real-time PCR

## Consistent Result from various sample




Total DNA was prepared from 150 mg of soybean (Lane 1 ~ 3) and maize (Lane 4 ~ 6) using GeneAll® Exgene™ GMO SV kit. Each 8 μℓ out of 50 μℓ of elute was resolved on 0.8 % agarose gel.
M : Lambda-HindIII

For the isolation of gDNA from various crops and its processed foods

## Exgene™ GMO SV mini

Format : mini SV column type S with 2.0 ml collection tubes

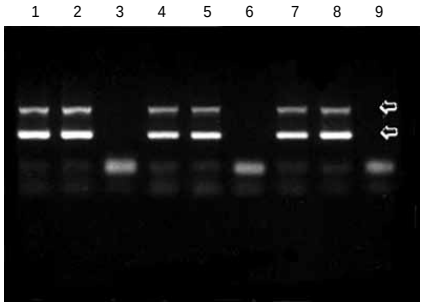
Sample size : Up to 300 mg grains

Preparation time : 40 ~ 50 min

Typical yield : 6 ~ 30 μg

Elution volume : 30 ~ 200 μℓ

## GMO gene Screening test

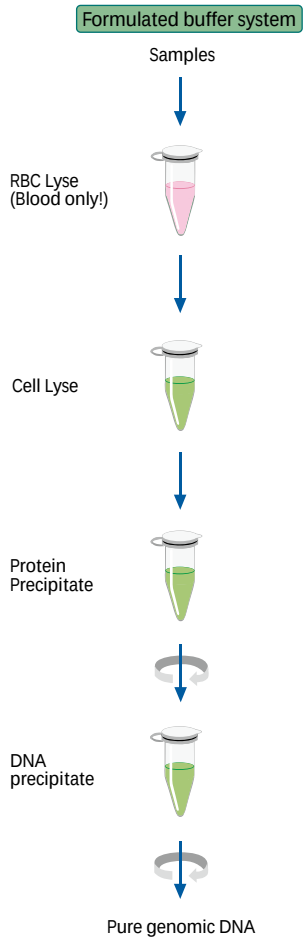



GMO gene of soybean was detected using previous DNA as template. PCR reaction was carried out doubly (Lane 1 ~ 2, 4 ~ 5, 7 ~ 8, respectively) and its template DNA corresponds to previous DNA (Lane 1 ~ 3). Lane 3, 6 and 9 represent negative controls.

| Products | Type | Size | Cat. No. |
|---|---|---|---|
| GeneAll® Exgene™ GMO SV | mini / spin / vacuum | 50 | 107-150 |
| GeneAll® Exgene™ GMO SV | mini / spin / vacuum | 200 | 107-102 |

# GeneAll® GenEx™ Blood / Cell / Tissue

## Procedures




## Component list

Buffer RL - RBC Lysis Buffer
Buffer AL - Cell Lysis Buffer
Buffer PP - Protein Precipitation Buffer
Buffer RE - DNA Rehydration Buffer
RNase A (20 mg/ml)
Proteinase K
PK storage Buffer
Protocol Handbook

## 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.

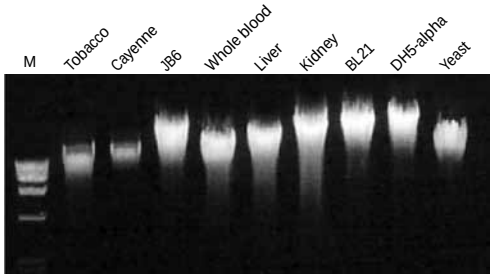
GenEx™ Series can be used for:

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 cell, yeast, bacteria, animal tissue 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™ Genomic DNA Isolation kit. 5 μℓ of eluate from each sample was resolved on 0.7% agarose gel.

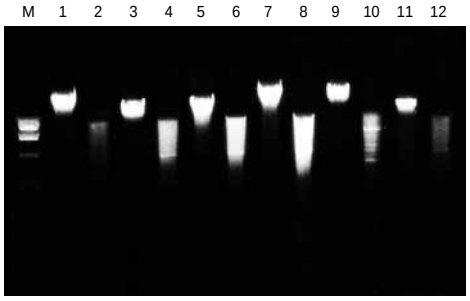
For the isolation of gDNA from whole blood, cultured cell, animal tissue and etc.

## 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 |

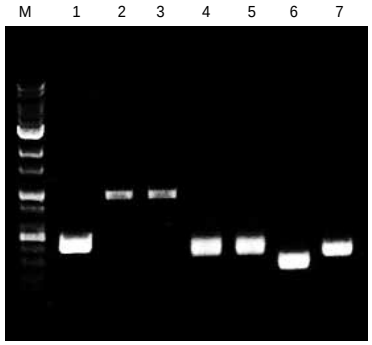
* Yield depends on the quantity of white blood cells present.

## Restriction Enzyme Assay




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

## PCR Amplification



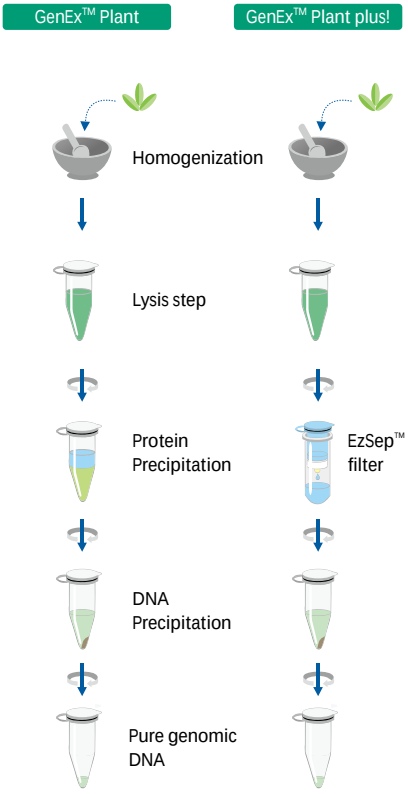

PCR reaction was performed with purified DNA using GenEx™ Genomic Isolation kit. Template DNA was isolated from Tobacco (Lane 1), BL21 (Lane 2), DH5α (Lane 3), Liver (Lane 4), Kidney (Lane 5), Whole blood (Lane 6) and JB6 (Lane 7).
M : 1 kb ladder

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

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

# GeneAll® GenEx™ Plant (plus!)

## Procedures




## Component list

Buffer PL
Buffer PP
Buffer RE
RNase A (100 mg/ml)
EzSep™ filter (plus! only)
Protocol Handbook

## Description

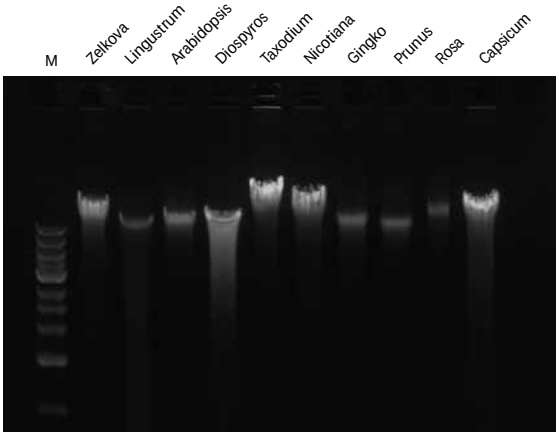
**GeneAll®** GenEx™ Plant kit provides an easy and convenient method for the isolation of total DNA from various plant samples without use of toxic chemical such as phenol or chloroform. This kit has a specially formulated solution format and enables the scalable preparation of almost intact size DNA. 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.

**GeneAll®** GenEx™ Plant plus! kit has an additional feature, EzSep™ filter column. 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 column 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)

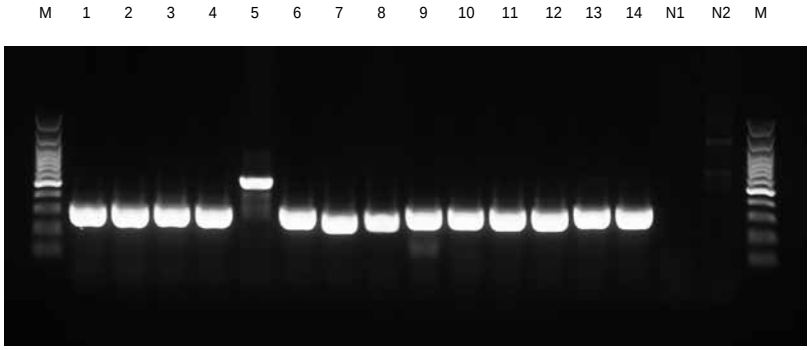
## Result from various samples




Total DNA prepared from various plant leaves using GenEx™ Plant kit. Each sample is extracted from 100 mg of tissue approximately. And 4 uls of purified DNA were resolved on 1.0 % agarose gel.
M : 1 kb DNA ladder

# For the isolation of total DNA from various plant samples

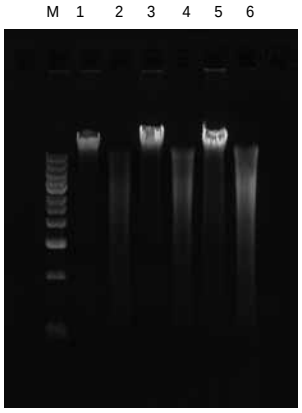
## PCR Amplification




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.

## Restriction Enzyme Assay



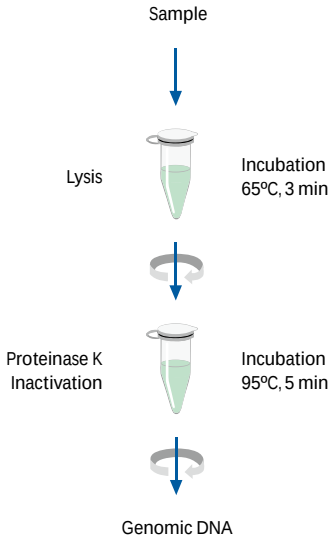

Total DNA(Lane 1, 3, 5) purified from the leaves of several species using GenEx™ Plant was subjected to restricted digestion(Lane 2, 4, 6) by HindIII.
Lane M : 1 kb DNA ladder
Lane 1 : Zelkova
Lane 3 : Taxodium
Lane 5 : Nicotiana

| Products | Type | Size | Cat. No. |
|---|---|---|---|
| GeneAll® GenEx™ Plant | Solution | Sx | 227-101 |
| GeneAll® GenEx™ Plant | Solution | Mx | 227-201 |
| GeneAll® GenEx™ Plant | Solution | Lx | 227-301 |
| GeneAll® GenEx™ Plant plus! | Solution | Sx | 228-101 |
| GeneAll® GenEx™ Plant plus! | Solution | Mx | 228-250 |
| GeneAll® GenEx™ Plant plus! | Solution | Lx | 228-320 |

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

# GeneAll® DirEx™

## Procedures




## Component list

DirEx™ Solution
Proteinase K
PK Storage buffer
Manual

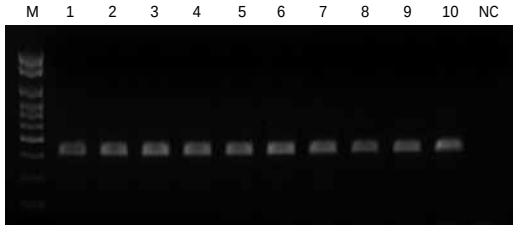
## Description

GeneAll® DirEx™ is for the preparation of template DNA for PCR in a single tube. It can be conveniently used for preparing the total DNA in just 8 minutes without the use of toxic chemicals such as phenol or chloroform. Template DNA can be prepared from various biological or forensic samples including whole blood, body fluids, tissues, cultured cells, tail snips, hair follicles, buccal swabs, cigarette butts and etc.
The procedure of DirEx™ consists of just two-steps, the lysis step and the inactivation step. The first is the lysis of samples with DirEx™ DNA preparation solution and proteinase K. And the following inactivation step inactivates the activity of proteinase K by heating. The prepared DNA solution can be used for the template of PCR or stored at -70 ºC for long-term storage.

## Features and Benefits

- Two steps, simple to use and user friendly kit for gDNA purification
- It takes 8 minutes to complete the whole procedure
- Optimized protocols for various samples such as cultured cell, animal tissue, hair, buccal swab, whole blood and dried blood spot
- Solution type
- No organic reagents, eco-friendly method
- Stable and consistent results
- Applicable to downstream such as PCR, Sequencing and RFLP etc.
- Proteinase K included

## Stable and Consistent Result




PCR analysis of prepared DNA using GeneAll® DirEx™ represents consistent result.
Template DNA was isolated from blood (Lane 1~10).
Lane M : 100 bp ladder marker
Lane NC : Negative control

# Single tube DNA preparation solution for PCR

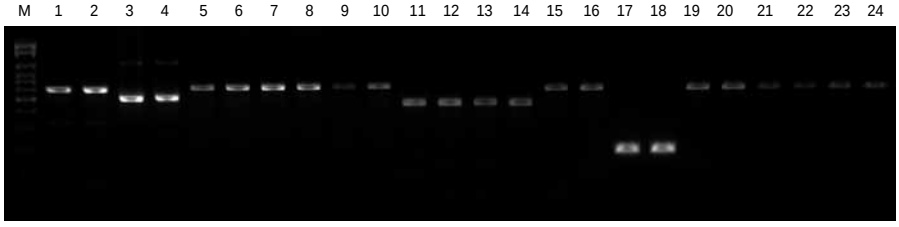
## DirEx™

Format : Solution

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

Preparation time : 8 min

## Stable and Consistent Result




PCR analysis was performed with prepared DNA using GeneAll® DirEx™.
Template DNA was isolated from CHO cells (Lane 1,2), RAW264.7 cells (Lane 3,4), Liver (Lane 5,6), Brain (Lane 7,8), Tail snips (Lane 9,10), Whole blood (Lane 11,12), Dried blood spot (Lane 13,14), Hair follicle (Lane 15,16), Hair shaft (Lane 17,18), Buccal swab (Lane 19,20), Cigarette butts (Lane 21~24).
Lane M : 100 bp ladder marker

| Products | Type | Size | Cat. No. |
|---|---|---|---|
| GeneAll® DirEx™ | Solution | 50 | 250-050 |

## 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. DirEx™ can be conveniently used for preparation of total DNA from various biological samples without the use of toxic chemical such as phenol or chloroform. Purified total DNA can be directly applicable in conventional PCR, real-time PCR, southern blotting, genotyping, RFLP and other downstream applications.

| Sample Type | Exgene™ Tissue SV (plus!)* | Exgene™ Blood SV | Exgene™ Cell SV | Exgene™ Clinic SV | Exgene™ Genomic DNA micro | Exgene™ Plant SV | Exgene™ Soil DNA mini | GenEx™ Blood / Cell / Tissue** B | GenEx™ Blood / Cell / Tissue** C | GenEx™ Blood / Cell / Tissue** T | GenEx™ Plant (plus!)*** | DirEx™ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | | | | | | ○ | | | | | ○ | |
| Rodent tails | ○ | | ○ | ○ | △ | | | | | ○ | | ○ |
| Saliva | | ○ | ○ | ○ | ○ | | | | | △ | | |
| Soil | | | | | | | ○ | | | | | |
| Sperm | | ○ | ○ | ○ | ○ | | | | | △ | | |
| Urine | △ | | △ | △ | ○ | | | | | △ | | |
| Yeast | | | ○ | | | | | | △ | △ | | |

○ Recommended / △ Suitable but not optimized and required additional protocol

* 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.

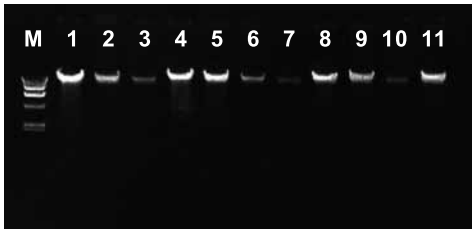
*** GenEx™ Plant plus! kit has an additional feature, EzSep™ filter column for cleared supernatant

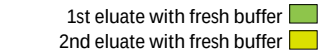
# Exgene™ / GenEx™ / DirEx™ Series

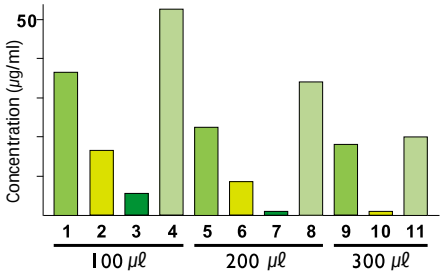
| Specifications | Exgene™ Tissue SV (plus!) | Exgene™ Blood SV | Exgene™ Cell SV | Exgene™ Clinic SV | Exgene™ Genomic DNA micro | Exgene™ Plant SV | Exgene™ Soil DNA mini | GenEx™ Blood / Cell / Tissue | GenEx™ Plant (plus!) | DirEx™ |
|---|---|---|---|---|---|---|---|---|---|---|
| Format | Spin / Vacuum | Spin / Vacuum | Spin / Vacuum | Spin / Vacuum | Spin | Spin / Vacuum | Spin / Vacuum | Solution | Solution | Solution |
| Scale | mini<br>Midi<br>MAXI | mini<br>Midi<br>MAXI | mini<br>MAXI | mini<br>Midi<br>MAXI | mini | mini<br>Midi<br>MAXI | mini | Sx<br>Lx | Sx<br>Mx<br>Lx | 50 ml |
| Starting sample | 25 mg<br>100 mg<br>250 mg | 300 µℓ<br>2 ml<br>10 ml | 5 x $10^6$ cells<br>1 x $10^8$ cells | 25 mg<br>100 mg<br>250 mg | # | 100 mg<br>400 mg<br>1000 mg | 500 mg | # | # | # |
| Typical yield | 5 ~ 50 µg<br>20 ~ 150 µg<br>80 ~ 400 µg | 4 ~ 20 µg<br>20 ~ 80 µg<br>80 ~ 400 µg | 10 ~ 50 µg<br>80 ~ 500 µg | 5 ~ 50 µg<br>20 ~ 150 µg<br>80 ~ 400 µg | # | 4 ~ 40 µg<br>10 ~ 150 µg<br>40 ~ 300 µg | # | # | # | # |
| Preparation time | 25 ~ 220 min<br>40 ~ 250 min<br>40 ~ 250 min | 20 ~ 30 min<br>40 ~ 55 min<br>40 ~ 55 min | 30 ~ 120 min<br>60 ~ 240 min | 25 ~ 220 min<br>40 ~ 250 min<br>40 ~ 250 min | 25 ~ 220 min | < 40 min<br>< 1 hour<br>< 1 hour | 25 min | 25 ~ 90 min<br>25 ~ 90 min | < 30 min<br>< 60 min<br>< 70 min | < 8 min |

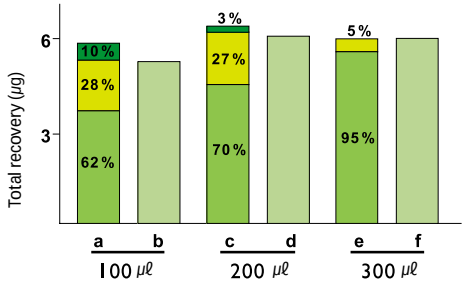
# Typical yield depends on the type and size of sample.

## Elution Tip !




The yield and concentration of purified DNA depending on the elution method. DNA was prepared from 200 µℓ of bovine whole blood. Each preparation was exactly identical except the elution method; Elution was performed 3 times per column with 100 µℓ (Lane 1 ~ 3) and 200 µℓ (Lane 5 ~ 7) and 2 times per column with 300 µℓ (Lane 9 ~ 10) of fresh buffer AE. At the same time, another elution was carried out 3 times (100 µℓ and 200 µℓ) and 2 times (300 µℓ) by recursive use of the eluate instead of fresh buffer AE (Lane 4, 8, 11). Total 11 eluates purified from 6 samples were resolved on 0.8 % agarose gel to visualize (upper left) and its concentration (lower left) and total yield (lower right) was measured by spectrophotometric analysis.

*Coming Soon.....*

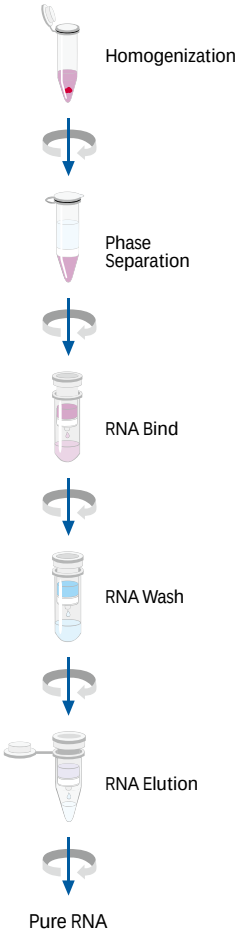
## Exgene™ Stool DNA mini

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

# 4. RNA Purification System

# GeneAll® Hybrid-R™

## Procedures




## Component list

RiboEx™
GeneAll® column type B
2 ml collection tube
1.5 ml collection tube
Buffer RB1
Buffer SW1
Buffer RNW
RNase-free water
Protocol Handbook

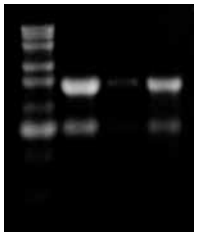
## Description

GeneAll® 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.

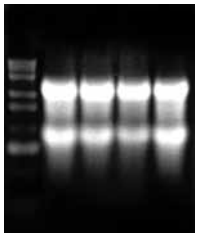
## Features and Benefits

- 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

## RNA Purification Result




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.
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. 100 mg / 1.2 ml was taken to the total RNA purification.
The purified total RNA was loaded on a 1 % formaldehyde gel.
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

# For the isolation of total RNA from tissues and cultured cells

## Hybrid-R™

Format : Spin column type B
with 1.5 ml / 2 ml collection tubes

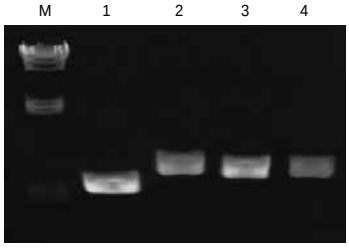
Sample size : ~ 100 mg tissue or 1 x $10^7$ cells

Application volume : ~ 700 μℓ

Minimum elution volume : 30 μℓ

Binding capacity : ~ 500 μg

## RT-PCR Result

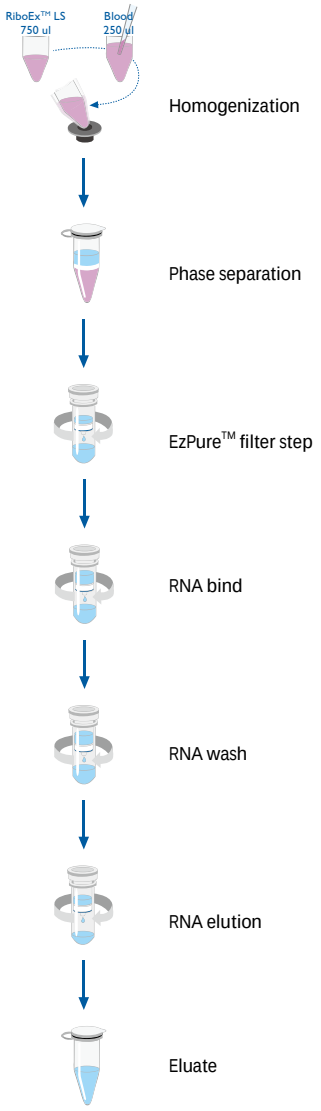



Total RNA was purified from various samples using Hybrid-R™.
And then, the cDNA was synthesized by reverse transcriptase.
The cDNA was amplified by PCR and confirmed by electrophoresis.
M : Lambda-HindIII
Lane 1 : PCR of E. coli cDNA
Lane 2 : PCR of Rat kidney cDNA
Lane 3 : PCR of Rat liver cDNA
Lane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

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

# GeneAll® Hybrid-R™ Blood RNA

## Procedures




## Component list

GeneAll® EzPure™ filter
GeneAll® Column type W
2 ml collection tube
1.5 ml collection tube
RiboEx™ LS
Buffer RB1
Buffer RBW
Buffer RNW
RNase-free water
Protocol Handbook

## Description

GeneAll® 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 monophasic 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 remains 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 mini spin column. After a series of washing with buffer RBW and RNW, pure RNA can be eluted by RNase-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
- Instant use : No need of additional materials
- No ethanol precipitation
- No Genomic DNA contamination

# For the isolation of total RNA from whole blood

## Hybrid-R™ Blood RNA

Format : Spin column type W
with 2 ml collection tubes

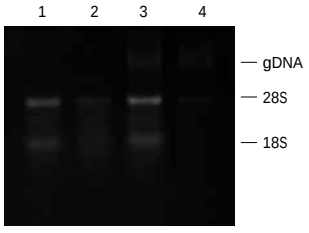
Sample size : 100 ~ 250 μℓ whole blood

Application volume : ~ 700 μℓ

Minimum elution volume : 30 μℓ

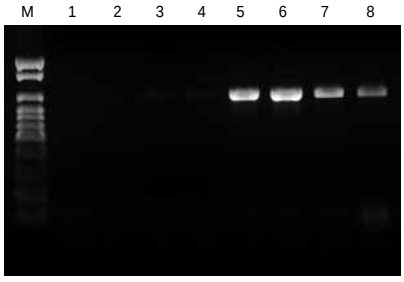
Binding capacity : 100 μg

## Comparison Data

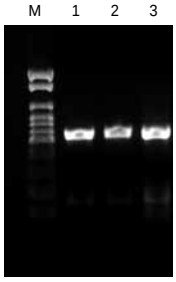



Total RNA was extracted from whole blood using several RNA extraction kits of different companies. The extracted total RNA was loaded on a 1 % formaldehyde gel.
Lane 1 : Total RNA from Hybrid-R™ Blood RNA for 250 μℓ of whole blood
Lane 2 : Total RNA from supplier A for 500 μℓ of whole blood
Lane 3 :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

## Genomic DNA contamination and RT-PCR result




As analysis of genomic DNA contamination, PCR for human beta-actin was performed with eluates, purified from whole blood using several kits of other companies.
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

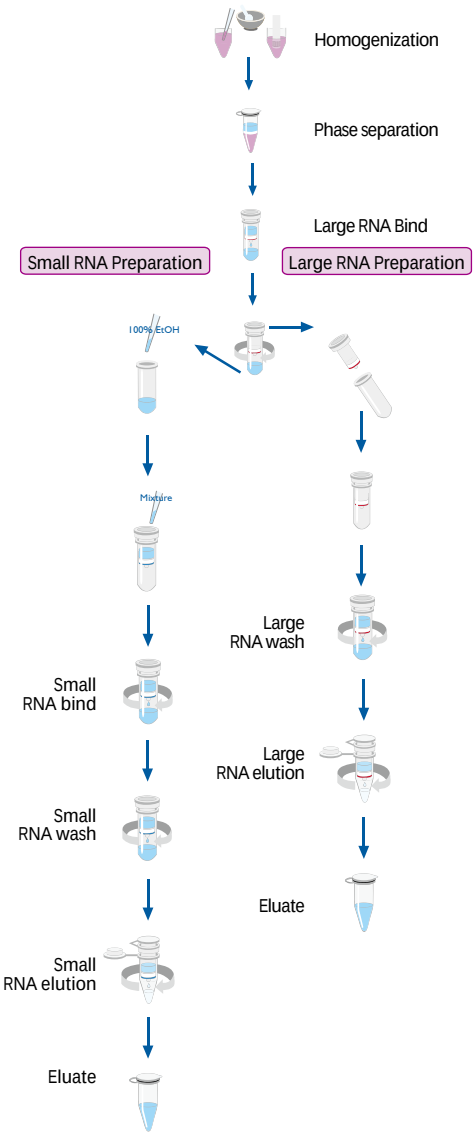



Total RNA was extracted from whole blood using Hybrid-R™ Blood RNA and other supplier kits. And then the cDNA was synthesized by reverse transcriptase. The cDNA was amplified by human beta-actin primer and confirmed by electrophoresis.
M : 1 Kb ladder
Lane 1 : PCR of cDNA from Hybrid-R™ Blood RNA
Lane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

| Products | Type | Size | Cat. No. |
|---|---|---|---|
| GeneAll® Hybrid-R™ Blood RNA | spin | 50 | 315-150 |

# GeneAll® Hybrid-R™ miRNA

## Procedures




## Component list

GeneAll® Column type B (red ring) (with collection tube)
GeneAll® Column type W (blue ring) (with collection tube)
2 ml collection tube
1.5 ml collection tube
RiboEx™
Buffer SW1
Buffer RBW
Buffer RNW
RNase-free water
Protocol Handbook

## Description

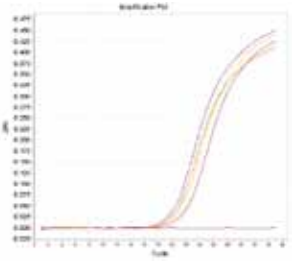
In recent years, interest in small RNA, such as siRNA and miRNA which are related to research of gene regulation, has expanded. There are many commercial kits for total RNA preparation, but most of these are focused on preparation of large RNA longer than 200 nucleotides. Because both siRNA and miRNA 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 is 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 RNase-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 RNase-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.

## Real-time PCR Result of miR-24 from small RNA



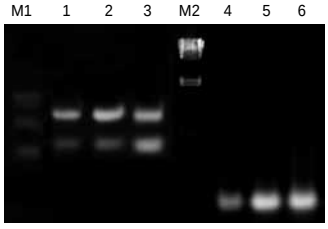
Real-time PCR was performed with purified small (micro) RNA using Hybrid-R™ miRNA kit. Small RNA was extracted from CHO cell, RAW264.7 cell and rat heart and liver. And then RT-PCR of miR-24 was performed using miScript PCR system (Qiagen). Amplified miR-24 was detected by 7500 Real-Time PCR system (Applied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

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

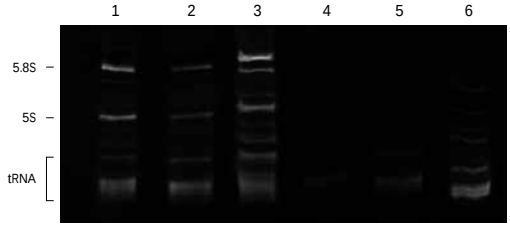
## Features and Benefits

- Preparation time : ~ 30 minutes
- Stable and consistent yield
- High purity and yield
- Perfect separation of small RNA fragment
- Sample size : Up to 50 mg tissue or up to 1 x $10^7$ cultured cells
- Recovery range : Large RNA : > 200 nucleotides
  Small RNA : < 200 nucleotides
- Instant use : No need of additional materials
- 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

## Experimental Result

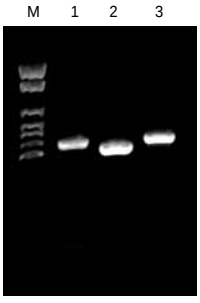



Large and small RNA was extracted from CHO (chinese hamster ovary) cell, RAW264.7 cell and rat lung tissue using Hybrid-R™ miRNA.
The purified large RNA was loaded on a 1% formaldehyde gel and small RNA was loaded on a 1% agarose gel.
M1 : 0.5 ~ 10 kb RNA ladder
M2 : Lambda-HindIII
Lane 1 : Large RNA from CHO cell
Lane 4 : Small RNA from CHO cell
Lane 2 : Large RNA from RAW264.7 cell
Lane 5 : Small RNA from RAW264.7 cell
Lane 3 : Large RNA from rat lung
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

## RT-PCR result of large RNA

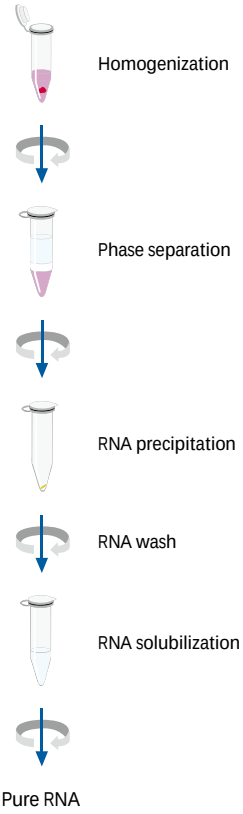



Large RNA was purified from CHO cell, RAW264.7 cell and rat lung tissue using Hybrid-R™ miRNA.
And then cDNA was sythesized by reverse transcriptase. The cDNA was amplified by beta-actin primer and confirmed by eletrophoresis.
M : 1kb ladder
Lane 1 : PCR of cDNA from CHO cell
Lane 2 : PCR of cDNA from RAW264.7
Lane 3 : PCR of cDNA from rat lung

| Products | Type | Size | Cat. No. |
|---|---|---|---|
| GeneAll® Hybrid-R™ miRNA | spin | 50 | 325-150 |

# GeneAll® RiboEx™

## Procedures




## Component list

GeneAll® RiboEx™ Total RNA Isolation Solution
Manual

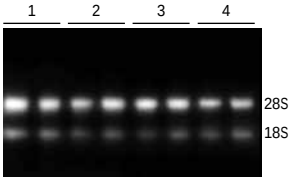
## Description

GeneAll® 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 30 μg / 1 x $10^6$ 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.

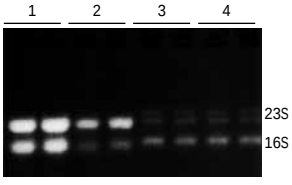
## Features and Benefits

- Format : Monophase solution type
- Sample size : Up to 100 mg tissue / 1 ml RiboEx™
  Up to 1 x $10^7$ cells / 1 ml RiboEx™
- Preparation time : 50 ~ 65 minutes
- Typical yield : Up to 10 μg / 1 mg tissue
  Up to 30 μg / 1 x $10^6$ 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 Result




Total RNA was purified from rat brain using several RNA extraction kits of different companies. 100 mg / 1.2 ml was 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

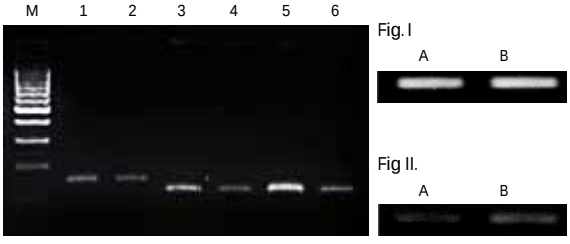



Total RNA was purified from E. coli DH5α using several RNA extraction kits of different companies. E. coli cells were taken to the total RNA purification. The purified total RNA was loaded on a 1 % formaldehyde gel.
Lane 1 : Total RNA from RiboEx™
Lane 2 : Total RNA from Supplier A
Lane 3 : Total RNA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

## Total RNA yield from various starting materials using RiboEx™

| Material | Sample type | Amount | Yield 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 |
| Gram(-) Bacteria | E. coil | $O.D_{600}$ ≒ 1.8 (1.5 ml pellet) | ~ 60 μg |

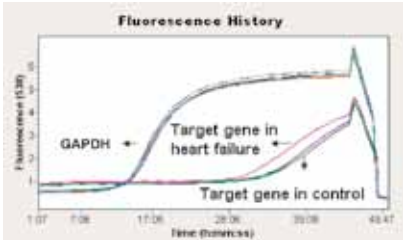
## RT-PCR Result




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.
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 amplification

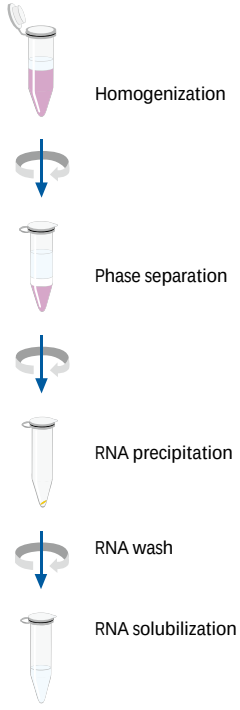



Real-time PCR was performed with purified total RNA using RiboEx™ total RNA isolation kit. Total RNA was extracted from rat atrium. And then the cDNA was synthesized through reverse transcriptase. Reference was confirmed by GAPDH primer and target gene was confirmed by ET-1 primer in the experimental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

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

# GeneAll® RiboEx™ LS

## Procedures




Pure RNA

## Component list

GeneAll® RiboEx™ LS Total RNA Isolation Solution
Manual

## Description

GeneAll® 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 : Up to 0.25 ml liquid sample / 0.75 ml RiboEx™ LS
  Up to 100 mg tissue / 0.75 ml RiboEx™ LS
- Preparation time : 50 ~ 65 minutes
- Typical yield : Up to 30 μg / 1 x $10^6$ cultured cells
  Up to 10 μg / 1 mg tissue
- High purity : $A_{260}/A_{230}$ > 2.0, $A_{260}/A_{280}$ > 1.8
- Accurate and consistence 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

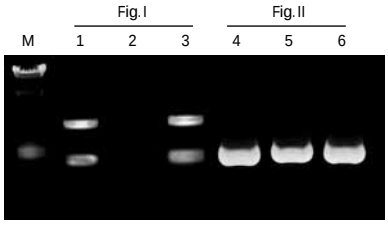


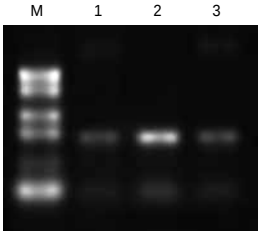

Fig. I Genomic DNA contamination was tested by PCR. Eluate, including total RNA of RAW264.7 cell, from several RNA extraction kits of different companies was the template of PCR and amplified by beta-actin primer.
M : Lambda-HindIII
Lane 1 : PCR of the eluate from supplier A for liquid sample
Lane 2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

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 for liquid sample
Lane 5 : PCR of cDNA from RiboEx™ LS
Lane 6 : PCR of cDNA from supplier B for liquid sample

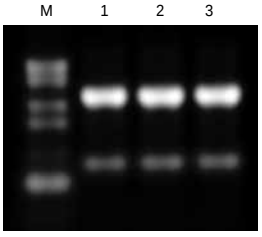
## Total RNA yield from various starting materials using RiboEx™ LS

| Material | Sample type | Amount | Yield 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 | 1 mg | ~ 1.5 μg |
| Gram(-) Bacteria | E. coil | $O.D_{600}$ ≒ 1.8 (1.5 ml pellet) | ~ 60 μg |

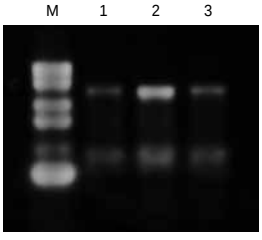
## Comparison Data



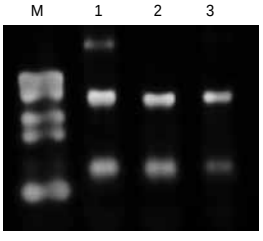

Total RNA was extracted from E. coli DH5α using several RNA extraction kits of different companies. The extracted total RNA was loaded on a 1 % formaldehyde gel.
Lane 1 : Total RNA from Supplier A for liquid sample
Lane 2 : Total RNA from RiboEx™ LS
Lane 3 : Total RNA from Supplier B for liquid sample




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 for liquid sample
Lane 2 : Total RNA from RiboEx™ LS
Lane 3 : Total RNA from Supplier B for liquid sample




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 for liquid sample
Lane 2 : Total RNA from RiboEx™ LS
Lane 3 : Total RNA from Supplier B for liquid sample

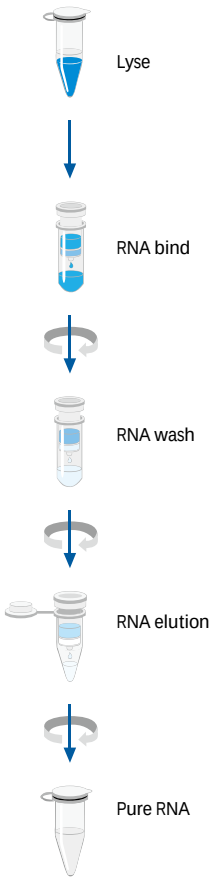



Total RNA was extracted from whole blood of rat using several RNA extraction kits of different companies. The extracted total RNA was loaded on a 1 % formaldehyde gel.
Lane 1 : Total RNA from Supplier A for liquid sample
Lane 2 : Total RNA from RiboEx™ LS
Lane 3 : Total RNA from Supplier B for liquid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

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

# GeneAll® Ribospin™

## Procedures




## Component list

GeneAll® column type F
2 ml collection tube
1.5 ml collection tube
Buffer LYS
Buffer GW1
Buffer RNW
RNase-free water
Manual

## 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 : Up to 25 mg tissue or up to 5 x $10^6$ cultured cells
- Typical yield : Up to 20 μg / 1 x $10^6$ cultured cells
  Up to 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

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

| Material | Sample type | Amount of starting material | Yield of Total 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 1.5 (2 ml pellet) | ~ 10 μg |

# For total RNA isolation from animal tissues and cultured cells

## Ribospin™

Format : Spin column type F
with 1.5 ml / 2 ml collection tubes

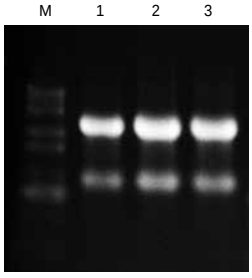
Sample size : ~ 25 mg or 5 x $10^6$ cells

Application volume : ~ 750 μℓ

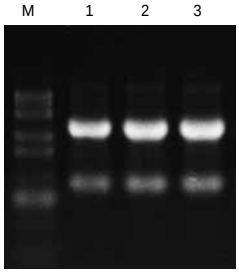
Minimum elution volume : ~ 40 μℓ

Binding capacity : ~ 100 μg

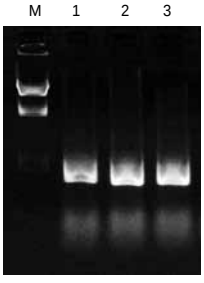
## Downstream Application Test



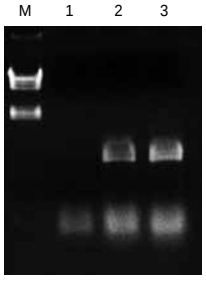

Total RNA was extracted from RAW264.7 cell using several RNA extraction kits of different companies. The extracted RNA was loaded on a 1% formaldehyde gel.
M : 0.5 ~ 10 kb RNA ladder
Lane 1 : Total RNA from supplier A
Lane 2 : Total RNA from supplier B
Lane 3 : Total RNA from Ribospin™




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.
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.
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™

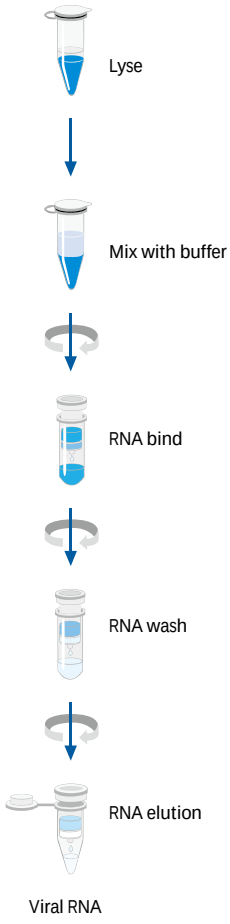



Total RNA was extracted from liver tissue of rat using Ribospin™ and supplier kits. And then the cDNA was synthesized by reverse transcriptase. The cDNA was amplified by PCR and confirmed by electrophoresis.
M : Lambda-HindIII
Lane 1 : PCR of cDNA from supplier A
Lane 2 : PCR of cDNA from supplier B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

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

# GeneAll® Ribospin™ vRD (plus!)

## Procedures




## 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 : up to 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

## Component list

GeneAll® column type V
2 ml collection tube
1.5 ml collection tube
Buffer VL
Buffer RB1
Buffer RBW
Buffer RNW
Nuclease-free water
Carrier RNA (plus! only)
Manual

Ribospin™ vRD (plus!)

| | |
|---|---|
| Format : | Spin column type V<br>with 1.5 ml / 2 ml collection tubes |
| Sample size : | ~ 300 μℓ |
| Application volume : | ~ 800 μℓ |
| Minimum Elution volume : | ~ 30 μℓ |
| Binding capacity : | ~ 100 μg |

## Experimental Result

* 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

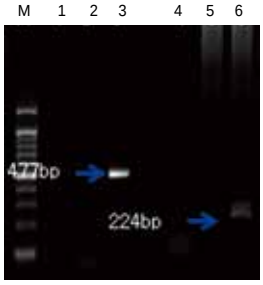
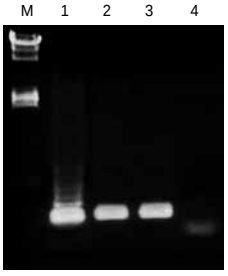


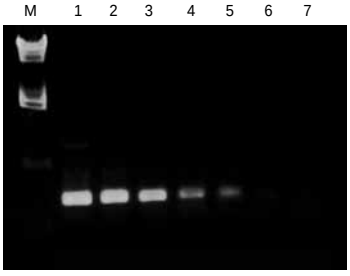

Fig III : PCR result using HPIV 3 specific primer

Viral RNA was purified from HPIV (human parainfluenza virus) 1, 2, 3 using Ribospin™ vRD.
And then the cDNA was synthesized by reverse transcriptase. The cDNA was amplified by PCR and confirmed by electrophoresis.
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.
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

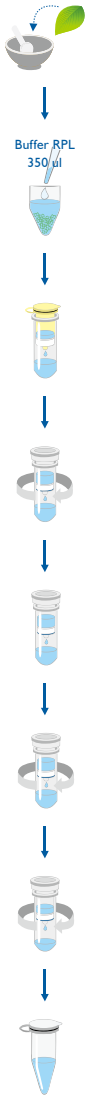



Total DNA was extracted from gradually diluted HSV-1 sample using Ribospin™ vRD.
And then the DNA of HSV-1 was amplified by PCR and confirmed by electrophoresis.
M : Lambda-HindIII
Lane 1 : PCR of DNA extracted from 6 x $10^4$ pfu HSV-1
Lane 2 : PCR of DNA extracted from 6 x $10^3$ pfu HSV-1
Lane 3 :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

| Products | Type | Size | Cat. No. |
|---|---|---|---|
| GeneAll® Ribospin™ vRD | Spin | 50 | 302-150 |
| GeneAll® Ribospin™ vRD plus! | Spin | 50 | 312-150 |

# GeneAll® Ribospin™ Plant

## Procedures




## Component list

GeneAll® EzPure™ filter (yellow)
(with collection tube)
GeneAll® column type W (blue ring)
(with collection tube)
1.5 ml collection tube
DNase I
Buffer RPL
Buffer REL
Buffer RBW
Buffer RNW
RNase-free water
Buffer DRB
Protocol Handbook

## 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 spin 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 RNase-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
- Sample size : Up to 100 mg plant tissue
- Including DNase I and treatment step
- Typical yield of RNA : ~ 50 µg / 100 mg tissue
- 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

# For total RNA isolation from various plant samples

## Ribospin™ Plant

Format : Spin column type W with 1.5 ml / 2 ml collection tubes, EzPure™ filter with 2 ml collection tubes

Sample size : ~100 mg plant tissue

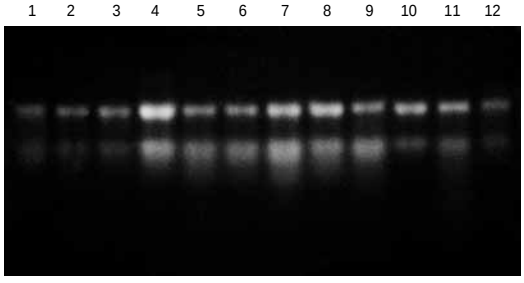
Maximum loading volume of EzPure™ filter : ~ 600 μℓ

Application volume of spin column : ~ 700 μℓ

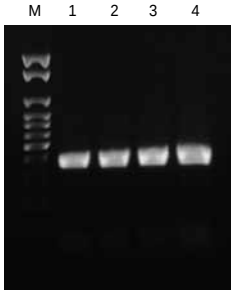
Minimum elution volume : 30 μℓ

Binding capacity : ~100 μg

## RNA Purification Result




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

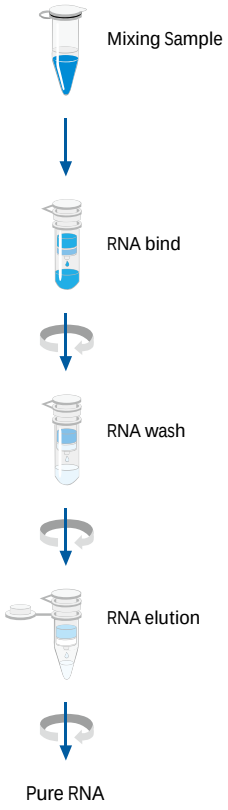



Total RNA was purified from Pinus densiflora by Ribospin™ Plant.
And the cDNA was synthesized by reverse transcriptase.
The cDNA was amplified by PCR and confirmed on a 1% agarose gel containing ethidium bromide.
Lane 1 : cDNA 1 μℓ
Lane 2 : cDNA 2 μℓ
Lane 3 : cDNA 3 μℓ
Lane 4 : cDNA 4 μℓ

| Products | Type | Size | Cat. No. |
|---|---|---|---|
| **GeneAll® Ribospin™ Plant** | spin | 50 | 307-150 |

# GeneAll® Riboclear™ (plus!)

## Procedures




## Component list

GeneAll® column type W
2 ml collection tube
1.5 ml collection tube
Buffer MS
Buffer RNW
RNase-free water
GeneAll®
Micro column type S (plus! only)
DNase I (plus! only)
Manual

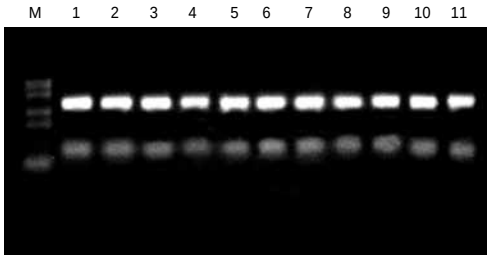
## Description

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 for removal of DNA and micro column for concentration of total RNA

## Features and Benefits

- Preparation time : ~ 6 minutes
- Stable and consistent yield
- High recovery rate : ~ 95 %
- Instant use : No need of additional materials
- 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

## Consistency Test




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

# For RNA cleanup from various RNA samples

## Riboclear™ (plus!)

Format : Spin column type W (Micro column type S) with 1.5 ml / 2 ml collection tubes

Sample size : ~ 100 μℓ

Recovery Rate : ~ 95%

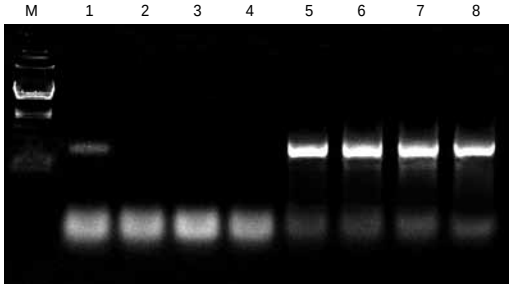
Preparation time : ~ 6 minutes

Application volume : ~ 800 μℓ

Minimum Elution volume : 30 μℓ

Binding capacity : ~ 100 μg

## Downstream Application Test

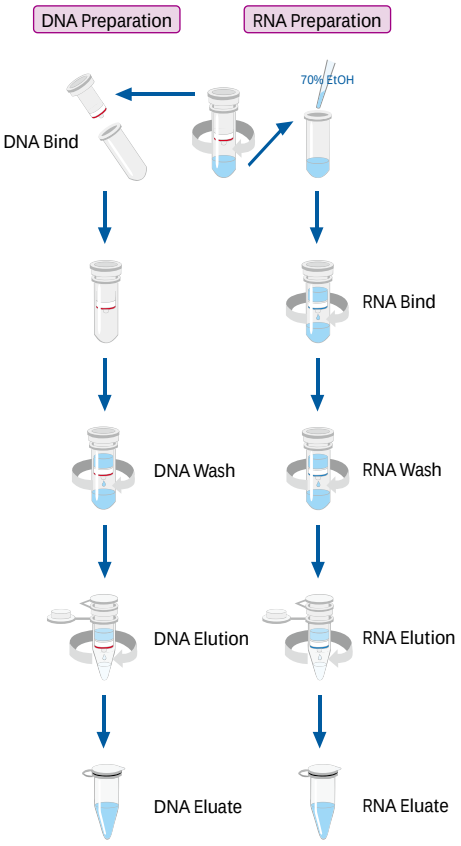



The purified RNA using Riboclear™ plus!
And then the cDNA was synthesized by reverse transcriptase.
The cDNA was amplified by PCR and confirmed by electrophoresis.
M : Lambda-HindIII
Lane 1 : PCR of undigested RNA eluate
Lane 2 ~ 4 : PCR of RNA eluate digested by DNase I
Lane 5 : RT-PCR of the product of Lane 1
Lane 6 ~ 8 : RT-PCR of the product of Lane 2, 3 and 4

| Products | Type | Size | Cat. No. |
|---|---|---|---|
| GeneAll® Riboclear™ | Spin | 50 | 303-150 |
| GeneAll® Riboclear™ plus! | Spin | 50 | 313-150 |

# GeneAll® Allspin™

## Procedures




## Component list

GeneAll® column type B (red ring)
(with collection tube)
GeneAll® column type W (blue ring)
(with collection tube)
2 ml collection tube without column
1.5 ml microcentrifuge tube
Buffer CTL
Buffer GW1
Buffer BW
Buffer RNW
Buffer AE
RNase-free water
Protocol Handbook

## Description

GeneAll® 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 : Up to 20 mg tissue or up to 1 x $10^7$ cultured cells
- Typical yield of RNA : Up to 20 μg / 1 x $10^6$ cultured cells
  Up to 60 μg / 10 mg liver tissue
- Typical yield of DNA : Up to 10 μg / 1 x $10^6$ cultured cells
  Up to 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

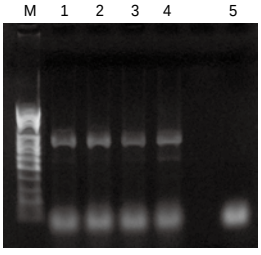
## The yield of genomic DNA and total RNA may vary depending on the tissue or cells from which it is obtained.

| Material | Sample type | Average yield of genomic DNA | Average 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 |

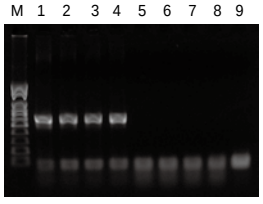
# For total RNA & DNA isolation from tissues and cultured cells

| | Allspin™ Column type B for DNA | Allspin™ Column type W for RNA |
|---|---|---|
| Color : | Red ring | Blue ring |
| Type : | Spin | Spin |
| Maximum amount of starting samples : | ~ 30 mg tissue or ~ 1 x $10^7$ cells | ~ 30 mg tissue or ~ 1 x $10^7$ cells |
| Maximum loading volume : | ~ 700 μℓ | ~ 700 μℓ |
| Minimum elution volume : | ~ 50 μℓ | ~ 30 μℓ |
| Maximum binding capacity : | ~ 100 μg | ~ 100 μg |
| Nucleic acid binding size : | ~ 50 kbp | > 200 nucleotides |

## Comparison Data




RT-PCR results from total RNA of rat heart tissue using Allspin™ and supplier kit were analysed on a 1% agarose gel.
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.
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

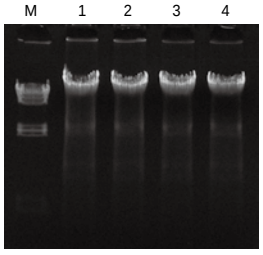
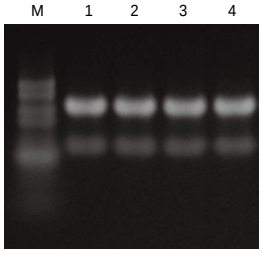



Fig II.




Genomic DNA and total RNA were purified from RAW264.7 cells using Allspin™ and supplier A
Fig. I Genomic DNA were analysed on a 1% agarose gel
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
M : 0.5 ~ 10 kb RNA ladder
Lane 1, 2 : Total RNA from Allspin™
Lane 3, 4 : Total RNA from Supplier A

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

## For RNA Purification

# Hybrid-R™ / RiboEx™ / Ribospin™ / Allspin™ 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.

| Specifications | Hybrid-R™ | Hybrid-R™ Blood RNA | Hybrid-R™ miRNA | RiboEx™ | RiboEx™ LS | Ribospin™ | Ribospin™ vRD (plus!)* | Ribospin™ Plant | Riboclear™ (plus!)*** | Allspin™** |
|---|---|---|---|---|---|---|---|---|---|---|
| Format | Spin | Spin | Spin | Solution | Solution | Spin | Spin | Spin | Spin | Spin |
| Recommended sample volume | 100 mg<br>1 x $10^7$ cells | 250 µℓ | 100 mg<br>1 x $10^7$ cells | 100 mg<br>1 x $10^7$ cells | 100 mg<br>250 µℓ | 25 mg<br>1 x $10^6$ cells | 300 µℓ | 100 mg | 100 µℓ | 30 mg<br>1 x $10^7$ cells |
| Preparation time | 30 min | 30 min | 30 min | 50 ~ 65 min | 50 ~ 65 min | 15 min | 20 min | 25 min | 6 min | 30 min |
| Max. loading volume | 700 µℓ | 700 µℓ | 700 µℓ | - | - | 750 µℓ | 800 µℓ | 700 µℓ | 800 µℓ | 700 µℓ |
| Min. elution volume | 30 µℓ | 30 µℓ | 30 µℓ | - | - | 40 µℓ | 30 µℓ | 30 µℓ | 30 µℓ | 30 ~ 50 µℓ |
| Binding capacity | 500 µg | 100 µg | 100 µg | - | - | 100 µg | 100 µg | 100 µg | 100 µg | 100 µg |

* Ribospin™ vRD *plus!* provides 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 for removal of DNA.

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

| Sample Type | Hybrid-R™ | Hybrid-R™ Blood RNA | Hybrid-R™ miRNA | RiboEx™ | RiboEx™ LS | Ribospin™ | Ribospin™ vRD (plus!) | Ribospin™ Plant | Riboclear™ (plus!) | Allspin™ |
|---|---|---|---|---|---|---|---|---|---|---|
| Animal cells | ○ | - | ○ | ○ | ○ | ○ | - | - | - | ○ |
| Animal tissues | ○ | - | ○ | ○ | △ | ○ | - | - | - | ○ |
| Plant tissues | - | - | - | ○ | △ | - | - | ○ | - | - |
| Bacteria | ○ | - | ○ | ○ | ○ | ○ | - | - | - | - |
| Yeast | ○ | - | ○ | ○ | ○ | - | - | - | - | - |
| Whole blood | - | ○ | - | - | ○ | - | - | - | - | - |
| Buffy coat | ○ | ○ | ○ | ○ | ○ | ○ | - | - | - | ○ |
| Various liquid sample | △ | △ | - | - | ○ | - | △ | - | - | - |
| Viral sample | - | - | - | - | - | - | ○ | - | - | - |
| RNA cleanup/ concentration | - | - | - | - | - | - | - | - | ○ | - |

○ Recommended / △ Suitable but not optimized

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

# GeneAll® AmpONE™

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

## New! 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 ㎕ |
| PCR product or DNA prep sample | 5 ㎕ |

### PCR mix

final conc. : 0.5X BB solution

example

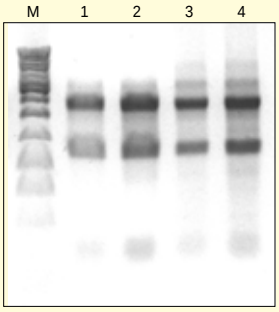
| | |
|---|---|
| PCR reaction vol. | 30 ㎕ |
| 6X BB solution | 2.5 ㎕ |

### PCR mixture (final conc. 0.5x)

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

# 5. PCR Amplification System

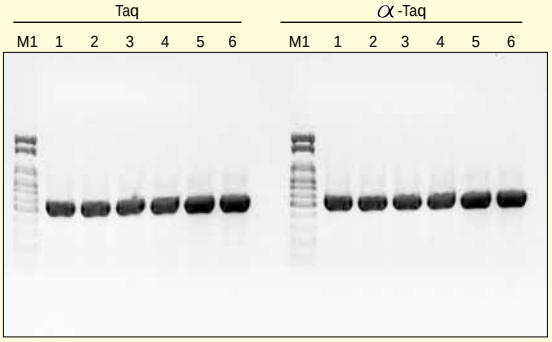





Comparison of PCR results using BB solution or house dye in RNA sample.
Sample : total RNA from CHO cells
Gel : 1% agarose gel

Sample A : 207 ng
Sample B : 253 ng

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

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

# GeneAll® AmpONE™

## Taq DNA Polymerase

### 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 25 mM $Mg^{2+}$)
dNTP Mix (2.5 mM each)
HQ Buffer
BB Solution
Manual

## Description

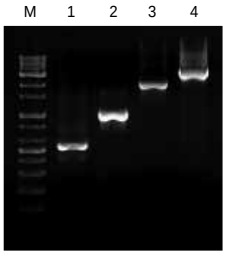
GeneAll® AmpONE™ Taq DNA polymerase is a recombinant enzyme derived from Thermus aquaticus, which is cloned and expressed in E. coli and possesses the same functions as the native enzyme. This enzyme is a thermostable DNA polymerase of 94 kDa and can be used in various experiments such as general PCR, 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

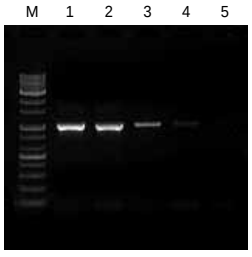
- High fidelity, High purity
- Provides HQ buffer for the amplification of a higher order structure such GC-rich templates
- No 3′→ 5′ exonuclease activity
  : addition of a single adenosine at 3′ end of the extension product

## Application

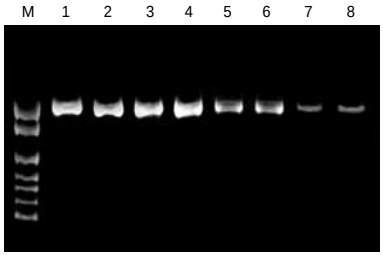
- General PCR
- TA-cloning
- DNA sequencing
- RT-PCR




Amplification of human genomic DNA.
To check the amplification of various size the used primers are designed in various region.
Template : human genomic DNA
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
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, 1.9 kb).
Template : human gDNA (40 ng)
M : 1 kb ladder
Lane 1, 2 : GeneAll® AmpONE™ Taq
Lane 3, 4 : company S
Lane 5, 6 : company I
Lane 7, 8 : company T

| Products | Type | Size | Cat. No. |
|---|---|---|---|
| **AmpONE™ Taq DNA Polymerase** | (2.5U/μℓ) | 250 U | 501-025 |
| | | 500 U (250 U x 2) | 501-050 |
| | | 1000 U (250 U x 4) | 501-100 |

dNTP mix and set are available. When ordering, please see the ordering information(page 82).

# GeneAll® AmpONE™

## α-Taq DNA Polymerase

### AmpONE™ α-Taq DNA polymerase Reaction mix

for 50 μℓ reaction

| | |
|---|---|
| 10X 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

### Description

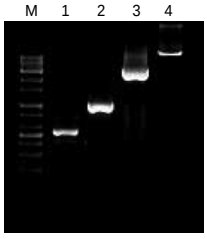
GeneAll® AmpONE™ α-Taq DNA polymerase is a modified enzyme mixed Taq DNA polymerase with Pfu DNA polymerase which has proof-reading activity and has the ability to amplify a long PCR product (up to 20 kb). Although many other PCR enzymes with high fidelity, mainly derived from the Pyrococcus furiosus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

### Features and Benefits

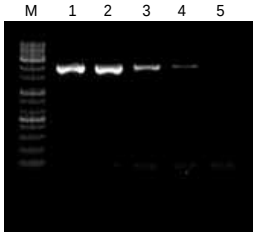
- High fidelity, High purity
- Provides HQ buffer for the amplification of a higher order structure such GC-rich templates
- Addition of a single adenosine at 3′ end of the extension product

### Application

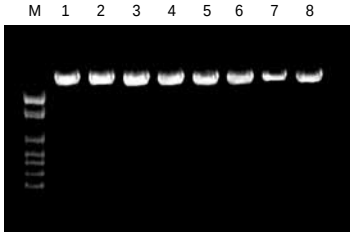
- General PCR
- Cloning for protein expression
- Long PCR not exceeding 20 Kb
- Multiplex PCR




Amplification of human genomic DNA.
To check the amplification of various size the used primers are designed in various region.
Template : human genomic DNA
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
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)
M : 1 kb ladder
Lane 1, 2 : GeneAll® AmpONE™ α-Taq
Lane 3, 4 : company S
Lane 5, 6 : company I
Lane 7, 8 : company T

| Products | Type | Size | Cat. No. |
|---|---|---|---|
| **AmpONE™ α-Taq DNA Polymerase** | (2.5U/μℓ) | 250 U | 502-025 |
| | | 500 U (250 U x 2) | 502-050 |
| | | 1000 U (250 U x 4) | 502-100 |

dNTP mix and set are available. When ordering, please see the ordering information(page 82).

# GeneAll® AmpONE™

## Pfu DNA Polymerase

### AmpONE™ Pfu DNA polymerase Reaction mix

for 50 μℓ reaction

| | |
|---|---|
| 10X 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 | 1 ~ 100 ng |
| Pfu (2.5 U/μℓ) | 0.5 ~ 1 μℓ |
| DW | up to 50 μℓ |

### Component list

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

### Description

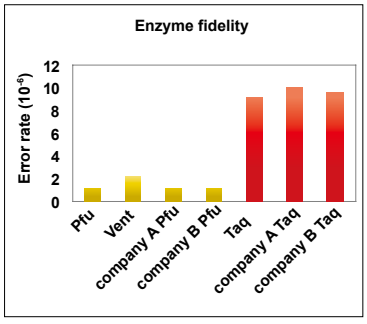
AmpONE™ Pfu DNA polymerase is a recombinant modified enzyme derived from Pyrococcus furiosus, which is cloned and expressed in E. coli.
This enzyme has 3′ → 5′ exonuclease (proofreading) activity as well as polymerase activity, providing higher fidelity than Taq polymerase.
And it is especially suited to PCR for protein expression and site direct mutagenesis.

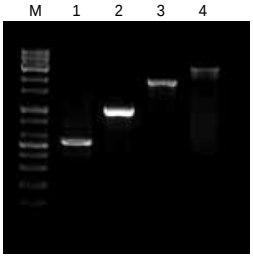
### Features and Benefits

- High fidelity, High purity
- Provides HQ buffer for the amplification of a higher order structure such GC-rich templates

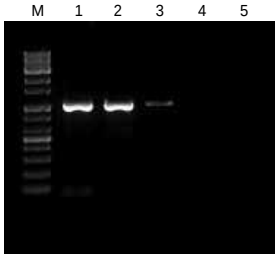
### Application

- Cloning for protein expression
- Site direct mutagenesis
- Blunt-end cloning

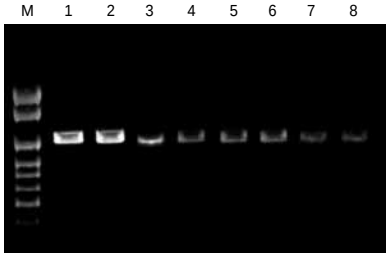



Amplification of human genomic DNA.
To check the amplification of various size the used primers are designed in various region.
Template : human genomic DNA
M : 1 kb ladder
Lane 1 : 517 bp
Lane 2 : 1.1 kb
Lane 3 : 1.9 kb
Lane 4 : 3.1 kb




Sensitivity of AmpONE™ Pfu DNA polymerase on the quantity of template.
Template : human genomic DNA
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™ Pfu DNA polymerase with other companies.
Template : human genomic DNA (40 ng)
M : 1 kb ladder
Lane 1, 2 : GeneAll® AmpONE™ Pfu
Lane 3, 4 : company S (cloned type)
Lane 5, 6 : company S (native type)
Lane 7, 8 : company I

| Products | Type | Size | Cat. No. |
|---|---|---|---|
| **AmpONE™ Pfu DNA Polymerase** | (2.5U/μℓ) | 250 U | 503-025 |
| | | 500 U (250 U x 2) | 503-050 |
| | | 1000 U (250 U x 4) | 503-100 |

dNTP mix and set are available. When ordering, please see the ordering information(page 82).

# GeneAll® AmpONE™

## HS-Taq DNA Polymerase

### AmpONE™ HS-Taq DNA polymerase Reaction mix

for 50 μℓ reaction

| | |
|---|---|
| 10X HS-Taq reaction buffer | 5μℓ |
| (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

### Description

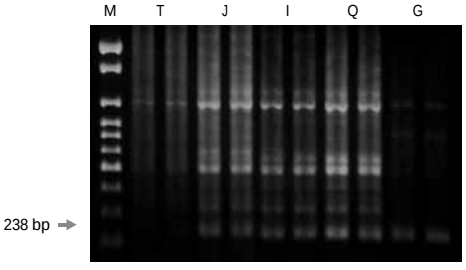
AmpONE™ HS-Taq DNA Polymerase, a modified form of GeneAll® AmpONE™ Taq DNA Polymerase, is designed to enhance the specificity, sensitivity and yield of DNA amplification. The activity of AmpONE™ HS-Taq DNA Polymerase is rapidly restored during the initial denaturation step of PCR. By limiting polymerase 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
- Provides HQ buffer for the amplification of a higher order structure such GC-rich templates

### 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
M : Marker
T : GeneAll® AmpONE™ Taq
J : company J
I : company I
Q : company Q
G : GeneAll® AmpONE™ HS-Taq

| Products | Type | Size | Cat. No. |
|---|---|---|---|
| **AmpONE™ HS-Taq DNA Polymerase** | (2.5U/μℓ) | 250 U | 531-025 |
| | | 500 U (250 U x 2) | 531-050 |
| | | 1000 U (250 U x 4) | 531-100 |

dNTP mix and set are available. When ordering, please see the ordering information(page 82).

# GeneAll® AmpONE™

## Clean Taq / Clean α-Taq DNA Polymerase

### AmpONE™ Clean Taq DNA polymerase Reaction mix

for 50 μℓ reaction

| | |
|---|---|
| 10X Clean 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 |
| Clean Taq (2.5 U/μℓ) | 0.5 ~ 1 μℓ |
| DW | up to 50 μℓ |

### AmpONE™ Clean α-Taq DNA polymerase Reaction mix

for 50 μℓ reaction

| | |
|---|---|
| 10X Clean α-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 |
| Clean α-Taq (2.5 U/μℓ) | 0.5 ~ 1 μℓ |
| DW | up to 50 μℓ |

## Description

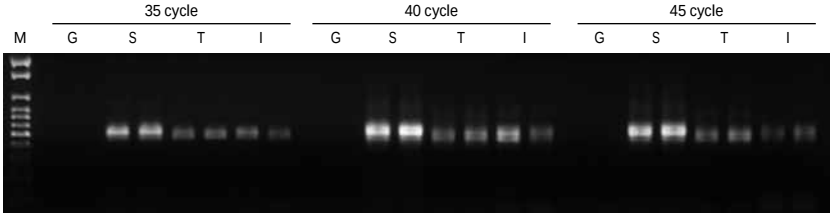
AmpONE™ Clean Taq and Clean α-Taq DNA Polymerase are thermostable enzymes to minimize the contamination of genomic DNA using new purification method. There is no E. coli genomic DNA contamination in the amplification (over 40 cycles) using E. coli 16S RNA primer.

## Features and Benefits

- Genomic DNA contamination FREE
- Enhanced sensitivity
- Providing HQ buffer (PCR enhancer buffer) for the amplification of a higher order structure
- Applications : Long PCR using AmpONE™ Clean α-Taq (~ 20 Kb)
  real-time PCR, RT-PCR, Multiplex PCR, TA-cloning

## Component list

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




Genomic DNA contamination test using E. coli 16S RNA primer
M : Marker, G : GeneAll® AmpONE™ Clean Taq, S : company S
T : company T, I : company I

| Products | Type | Size | Cat. No. |
|---|---|---|---|
| **AmpONE™ Clean Taq DNA Polymerase** | (2.5U/μℓ) | 250 U | 551-025 |
| | | 500 U (250 U x 2) | 551-050 |
| | | 1000 U (250 U x 4) | 551-100 |
| **AmpONE™ Clean α-Taq DNA Polymerase** | (2.5U/μℓ) | 250 U | 552-025 |
| | | 500 U (250 U x 2) | 552-050 |
| | | 1000 U (250 U x 4) | 552-100 |

dNTP mix and set are available. When ordering, please see the ordering information(page 82).

# GeneAll® AmpONE™

# Taq / α-Taq / HS-Taq Premix

AmpONE™ Premix
Reaction mix

<Lyophilized>

| Reaction vol. | 20 μℓ | 50 μℓ |
|---|---|---|
| Premix | ~ μℓ | ~ 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 |

<Solution>

| 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

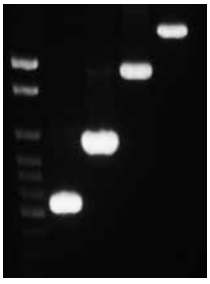
Taq / α-Taq / HS-Taq premix 96 tubes
(0.2 ml 8-tube strip x 12ea)
0.2 ml PCR tube storage rack
Manual

## Description

AmpONE™ Taq / α-Taq / HS-Taq Premix contains all reaction components required for PCR, such as reaction buffer, dNTP, gel loading dye, stabilizer and sediment in addition to Taq DNA polymerase. It is recommended to use in routine PCR (below 10 kb), TA 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 300 bp in length.

## Features and Benefits

- Lyophilized mix type or 2X solution type
- Use of low tracking dye (1% agarose gel, 300 bp)
- Ready to use
- Minimal handling
- Stable for 1 year at -20 °C or 2 weeks at RT
- 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)
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

| Products | Format | Type | Size | Cat. No. |
|---|---|---|---|---|
| **AmpONE™ Taq Premix** | Lyophilized | 20 μℓ | 96 tubes | 521-200 |
| | | 50 μℓ | 96 tubes | 521-500 |
| **AmpONE™ α-Taq Premix** | Lyophilized | 20 μℓ | 96 tubes | 522-200 |
| | | 50 μℓ | 96 tubes | 522-500 |
| **AmpONE™ Taq Premix (w/o dye)** | Lyophilized | 20 μℓ | 96 tubes | 524-200 |
| **AmpONE™ HS-Taq Premix** | Solution | 20 μℓ | 96 tubes | 525-200 |
| | | 50 μℓ | 96 tubes | 525-500 |
| **AmpONE™ Taq Premix** | Solution | 20 μℓ | 96 tubes | 526-200 |
| | | 50 μℓ | 96 tubes | 526-500 |
| **AmpONE™ α-Taq Premix** | Solution | 20 μℓ | 96 tubes | 527-200 |
| | | 50 μℓ | 96 tubes | 527-500 |

# GeneAll® AmpMaster™

## Taq / α-Taq / HS-Taq

### 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

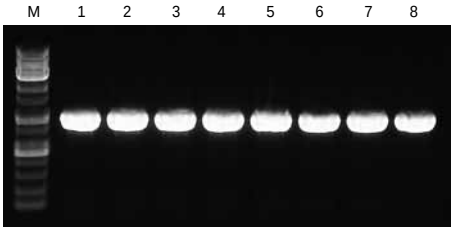
2X Taq / α-Taq / HS-Taq PCR master mix
Manual

## Description

GeneAll® 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 DNA polymerase. It is recommended for use in routine PCR (below 10 kb), TA cloning and primer extension.
GeneAll® 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 300 bp in length.

## Features and Benefits

- 2X solution type
- Use of low tracking dye (1% agarose gel, 300 bp)
- 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)
M : 1 kb plus ladder
Lane 1 ~ 8 : 1 kb
Reaction vol. : 20 μℓ Loading vol. : 2 μℓ

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

# AmpONE™ / AmpMaster™ Series

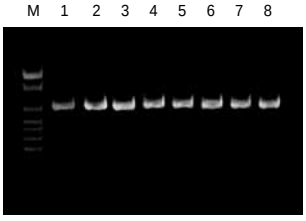
**GeneAll®** AmpONE™ DNA polymerase series are designed for various applications such as cloning, genotyping, sequencing, routine PCR, real-time PCR and long PCR and provided with HQ buffer for the amplification of a higher order structure. AmpONE™ Premix (lyophilized or solution form) and AmpMaster™ mix (liquid form) are provided with DNA polymerase, reaction buffer, dNTP and loading dye. The BB solution contains sediment and two dyes (xylene cyanol FF and Orange G) that will allow its location in the gel to be identified and separated individual strands to be monitored during electrophoresis. This solution can be applied to use of two purposes. The first case is to use as a general gel loading dye. And the second is for master mix in pre-PCR. In this case, PCR products can be loaded directly into the wells of the gel without additional loading dye.

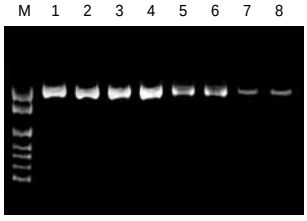
| Applications | AmpONE™ Taq DNA Polymerase | AmpONE™ α-Taq DNA Polymerase | AmpONE™ Pfu DNA Polymerase | AmpONE™ HS-Taq DNA Polymerase |
|---|---|---|---|---|
| Standard PCR (< 3 kb) | +++ | +++ | + | ++ |
| Hot start PCR | - | - | - | +++ |
| Multiplex PCR | + | +++ | + | ++ |
| Nested PCR | + | ++ | + | + |
| Amplification product size | < 5 kb | < 20 kb | < 5 kb | < 5 kb |
| HQ Buffer* | ○ | ○ | ○ | ○ |
| BB Solution** | ○ | ○ | ○ | ○ |

- **GeneAll®** AmpONE™ Premix and Master mix are available.
- **GeneAll®** AmpONE™ Premix and Master mix are made from AmpONE™ Taq / α-Taq / HS-Taq DNA polymerase which contain all reaction components required for PCR, such as reaction buffer, dNTP, gel loading dye, stabilizer and sediment.
- **GeneAll®** AmpONE™ Premix is lyophilized or solution form and **GeneAll®** AmpMaster™ mix is 2-fold concentrated form.

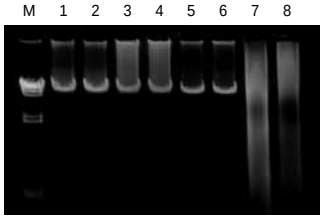
* A novel additive that enables efficient amplification of GC-rich template or long size amplification.

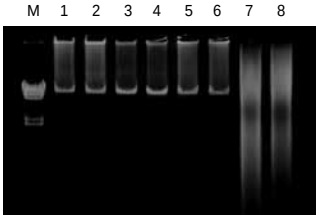
** High-quality gel-loading dye for analysis of PCR samples using electrophoresis.




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




Comparison of α-Taq DNA polymerase with other companies (14, 20 kb)
Template : human genomic DNA (100 ng)
M : Lambda-HindIII
Lane 1, 2 : **GeneAll®** AmpONE™ α-Taq
Lane 3, 4 : company S
Lane 5, 6 : company I
Lane 7, 8 : company T

# GeneAll® SV Column & Filter Column Accessories (Mini)

Column type Q

Column type B

Column type Qe

Column type W

Column type D

Column type F

Column type G

Column type V

Column type S

EzClear™ filter Column

Micro Column type S

EzSep™ filter Column

# Ordering Information

| Products | Scale | Size | Cat. No. | Type |
|---|---|---|---|---|
| **GeneAll® Hybrid-Q™** for rapid preparation of plasmid DNA | | | | |
| Plasmid Rapidprep | | 50 | 100-150 | mini / spin |
| | | 100 | 100-102 | |
| **GeneAll® Exprep™** for purification of plasmid DNA | | | | |
| Plasmid SV | mini | 50 | 101-150 | spin / vacuum |
| | | 200 | 101-102 | |
| | | 1,000 | 101-111 | |
| | Midi | 26 | 101-226 | spin / vacuum |
| | | 50 | 101-250 | |
| | | 100 | 101-201 | |
| **GeneAll® Exfection™** for purification of highly pure 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 | |
| **GeneAll® 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 | |
| **GeneAll® 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 | |

# Ordering Information

| Products | Scale | Size | Cat. No. | Type |
|---|---|---|---|---|
| **GeneAll® 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 |
| GMO SV | mini | 50 | 107-150 | spin / vacuum |
| | | 200 | 107-102 | |
| **GeneAll® GenEx™ for isolation of total DNA** | | | | |
| 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 | |

※ *For more information about ordering, visit www.geneall.com*

| Products | Scale | Size | Cat. No. | Type |
|---|---|---|---|---|
| **GeneAll®** DirEx™ Single tube DNA preparation buffer for PCR | | | | |
| DirEx™ | | 50 | 250-050 | solution |
| **GeneAll®** RNA series for purification 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™ vRD | mini | 50 | 302-150 | spin |
| Ribospin™ vRD *plus!* | mini | 50 | 312-150 | spin |
| Ribospin™ Plant | mini | 50 | 307-150 | spin |
| Allspin™ | mini | 50 | 306-150 | spin |
| **GeneAll®** AmpONE™ for PCR amplification | | | | |
| Taq DNA polymerase | | 250 U | 501-025 | (2.5 U/㎕) |
| | | 500 U | 501-050 | |
| | | 1,000 U | 501-100 | |
| α- Taq DNA polymerase | | 250 U | 502-025 | (2.5 U/㎕) |
| | | 500 U | 502-050 | |
| | | 1,000 U | 502-100 | |
| Pfu DNA polymerase | | 250 U | 503-025 | (2.5 U/㎕) |
| | | 500 U | 503-050 | |
| | | 1,000 U | 503-100 | |
| Hotstart Taq DNA polymerase | | 250 U | 531-025 | (2.5 U/㎕) |
| | | 500 U | 531-050 | |
| | | 1,000 U | 531-100 | |
| Clean Taq DNA polymerase | | 250 U | 551-025 | (2.5 U/㎕) |
| | | 500 U | 551-050 | |
| | | 1,000 U | 551-100 | |
| Clean α- Taq DNA polymerase | | 250 U | 552-025 | (2.5 U/㎕) |
| | | 500 U | 552-050 | |
| | | 1,000 U | 552-100 | |

# Ordering Information

| Products | Scale | Size | Cat. No. | Type |
|---|---|---|---|---|
| **GeneAll® AmpONE™ for PCR amplification** | | | | |
| Taq Premix | 96 tubes | 20 μℓ | 521-200 | lyophilized |
| | | 50 μℓ | 521-500 | |
| | | 20 μℓ | 526-200 | solution |
| | | 50 μℓ | 526-500 | |
| α - Taq Premix | 96 tubes | 20 μℓ | 522-200 | lyophilized |
| | | 50 μℓ | 522-500 | |
| | | 20 μℓ | 527-200 | solution |
| | | 50 μℓ | 527-500 | |
| HS - Taq Premix | 96 tubes | 20 μℓ | 525-200 | solution |
| | | 50 μℓ | 525-500 | |
| Taq Premix (w/o dye) | 96 tubes | 20 μℓ | 524-200 | lyophilized |
| dNTP Mix | | 500 μℓ | 509-020 | 2.5 mM each |
| dNTP set<br>(set of dATP, dCTP, dGTP and dTTP) | | 1 ml x 4 tubes | 509-040 | 100 mM |
| **GeneAll® AmpMaster™ for PCR amplification** | | | | |
| Taq Master mix | | 2x | 541-010 | 0.5 ml x 2 tubes |
| | | 2x | 541-050 | 0.5 ml x 10 tubes |
| α - Taq Master mix | | 2x | 542-010 | 0.5 ml x 2 tubes |
| | | 2x | 542-050 | 0.5 ml x 10 tubes |
| HS - Taq Master mix | | 2x | 545-010 | 0.5 ml x 2 tubes |
| | | 2x | 545-050 | 0.5 ml x 10 tubes |

* Each dNTP is available

**Visit GeneAll® Community**
www.geneall.com
www.geneall.co.kr

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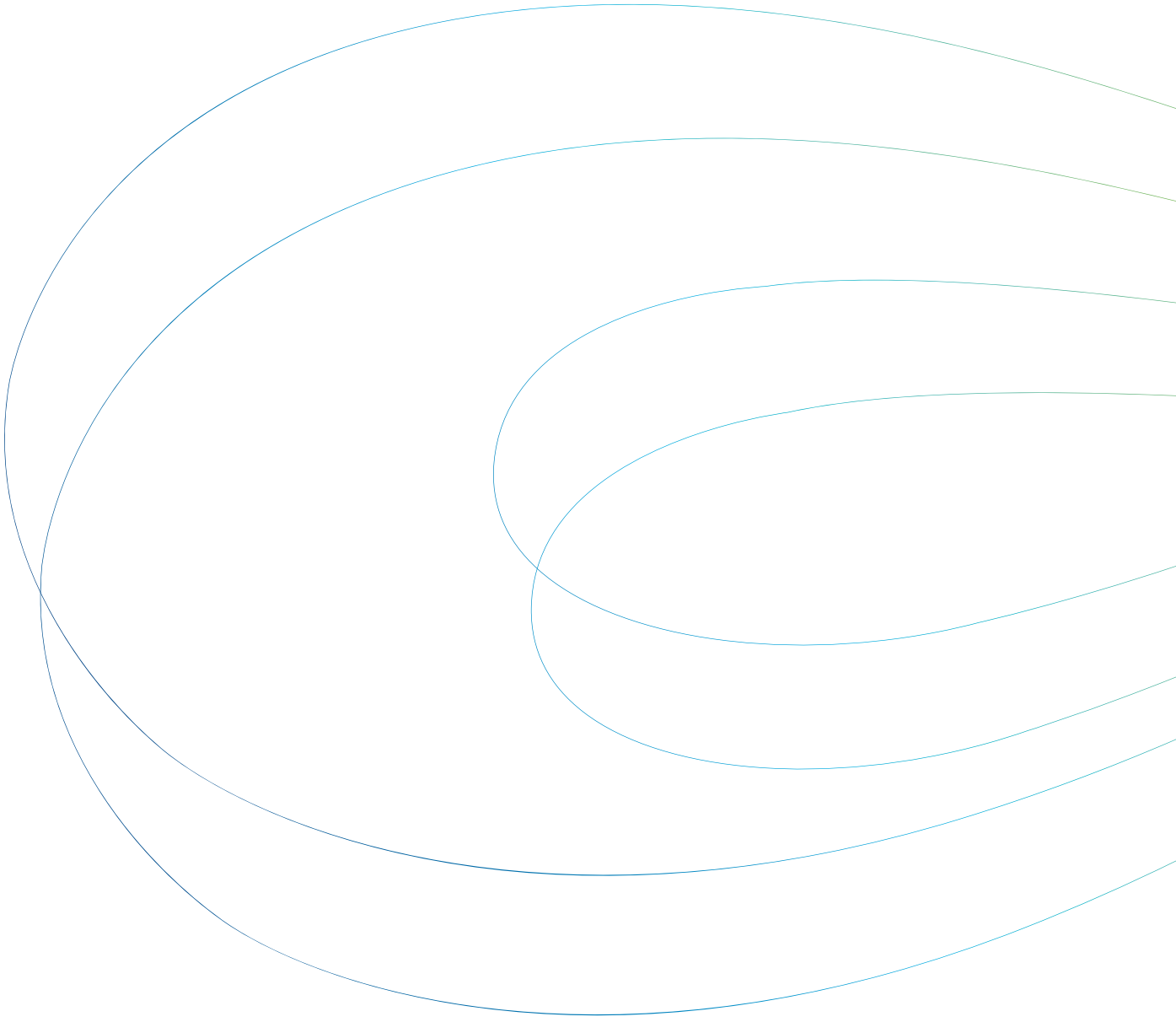
Fax: 82-2-407-0779
E-mail: tech@geneall.com

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



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