

# RNA

## RNA Purification system

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RiboEx™ Series

Hybrid-R™ Series

Ribospin™ Series

Allspin™

Riboclear™ Series

RiboSaver™

Automated Nucleic Acid Extraction System



ISO 13485 Certified

**GeneAll®**



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# RNA Purification System

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

GeneAll® RNA purification kit	Organic solvent (Phenol base)					Non-organic solvent (Non-phenol base)								Related products (RNA clean-up and stabilizer)		
	Solution type		Column type			Column type								Column type		Solution type
	RiboEx™	RiboEx™ LS	Hybrid-R™	Hybrid-R™ Blood RNA	Hybrid-R™ miRNA	Ribospin™	Ribospin™ II	Ribospin™ vRD (Plus) *	Ribospin™ vRD II *	Ribospin™ Plant	Ribospin™ Seed/Fruit	Ribospin™ Pathogen/ TNA	Allspin™ **	Riboclear™	Riboclear™ Plus ***	RiboSaver™
<b>Kit Specification</b>																
Size	100 ml	100 ml	100 prep	50 prep	50 prep	50 prep	50 prep	50 prep	50 prep	50 prep	50 prep	50 prep	50 prep	50 prep	50 prep	100 ml
Preparation time	50–65 min	50–65 min	30 min	30 min	30 min	15 min	30 min	20 min	15 min	25 min	30 min	30 min	30 min	6 min	17 min	-
Recommended sample amount	100 mg 1 x 10 <sup>7</sup> cells	250 µl	100 mg 1 x 10 <sup>7</sup> cells	250 µl	100 mg 1 x 10 <sup>7</sup> cells	25 mg 5 x 10 <sup>6</sup> cells	30 mg 1 x 10 <sup>7</sup> cells	300 µl	100 µl	100 mg	100 mg	200 µl 20 mg 5 x 10 <sup>6</sup> cells	30 mg 1 x 10 <sup>7</sup> cells	100 µl	100 µl	-
Max. loading vol.	-	-	700 µl	700 µl	700 µl	750 µl	750 µl	800 µl	750 µl	700 µl	750 µl	750 µl	700 µl	750 µl	800 µl	-
Elution vol.	-	-	30-100 µl	30-50 µl	30-50 µl	40-50 µl	30-50 µl	30-50 µl	20-50 µl	30-50 µl	30-100 µl	30-200 µl	30-100 µl	30-50 µl	20-50 µl	-
Binding capacity	-	-	500 µg	100 µg	100 µg	100 µg	500 µg	100 µg	100 µg	100 µg	500 µg	100 µg	100 µg	500 µg	100 µg	-
<b>Sample Type</b>																
	○ Recommended / △ Suitable but Not Optimized															
Animal cells	○	○	○		○	○	○						○			
Animal tissues	○	△	○		○	○	○					○	○			
Bacteria cells	○	○	○		○	△	△						△			
Yeast	○	○	○		○	△	△						△			
Cell cultured media												○				
Whole blood		○		○								○				
Buffy coat		○		○		○	○						○			
Serum												○				
Plasma												○				
Plant tissues	○	△	○							○	○					
Seed											○					
Fruit											○					
Rhizome											○					
Various liquid sample (Body fluids)		○		△				○	○			○				
Viral sample								○	○			○				
Stool												○				
RNA clean-up/ Concentration														○	○	
Sample stabilization																○

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

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

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

※ Typical yield depends on the type, condition and volume of sample.

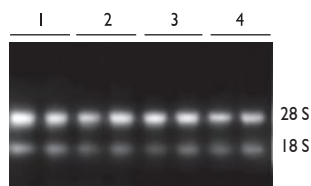
## RiboEx™

For total RNA isolation from various samples

### [ Features ]

- Monophasic solution of phenol and guanidine salt
- Preparation time : 50~65 min
- Effective performance in difficult lysis sample through superior lysis power
- Easy aqueous phase separation through a clear distinction
- Sample size : Up to 100 mg tissue / 1 ml RiboEx™  
Up to  $1 \times 10^7$  cultured cells / 1 ml RiboEx™
- Typical yield : Up to 10  $\mu\text{g}$  / 1 mg tissue  
Up to 30  $\mu\text{g}$  /  $1 \times 10^6$  cultured cells
- Accurate and easy phase separation
- High purity :  $A_{260}/A_{230} > 2.0$ ,  $A_{260}/A_{280} > 1.8$
- Ready for use in RT-PCR, northern blotting, dot blotting, *in vitro* translation, molecular cloning, Real-time PCR, and other analytical procedures

### [ Performance ]



#### Comparison of RNA Extraction

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



#### Real-Time PCR Amplification

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  $\beta$ -actin primer

Lane 3, 4, 5, 6 : Amplified by Oct 4 primer

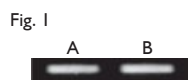


Fig. I

Fig. II

Fig. I, II. Total RNA was purified from HEK 293 cells using RiboEx™ and Supplier A kits. And then the cDNA was synthesized by reverse transcriptase.

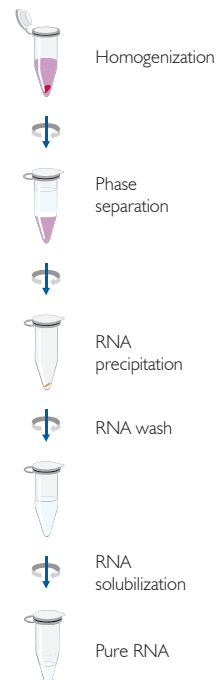
The cDNA was amplified by PCR and confirmed by electrophoresis.

Lane A : Supplier A kit

Lane B : RiboEx™

Fig. I : Amplified by GAPDH primer

Fig. II : Amplified by Hif-I primer



Products	Scale	Size	Cat. No.	Type
RiboEx™	mini	100 ml	301-001	solution
RiboEx™	mini	200 ml	301-002	solution

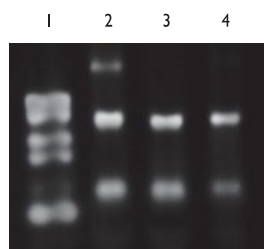
## RiboEx™ LS

For total RNA isolation from various liquid samples

### [ Features ]

- Monophasic solution of phenol and guanidine salt
- Preparation time : 50~65 min
- Effective performance in difficult lysis sample through superior lysis power
- Easy aqueous phase separation through a clear distinction
- Sample size : Up to 0.25 ml liquid sample / 0.75 ml RiboEx™ LS  
Up to 100 mg tissue / 0.75 ml RiboEx™ LS
- Typical yield : Up to 10  $\mu\text{g}$  / 1 mg tissue  
Up to 30  $\mu\text{g}$  /  $1 \times 10^6$  cultured cells
- High purity :  $A_{260}/A_{230} > 2.0$ ,  $A_{260}/A_{280} > 1.8$
- Ready for use in RT-PCR, northern blotting, dot blotting, *in vitro* translation, molecular cloning, Real-time PCR, and other analytical procedures

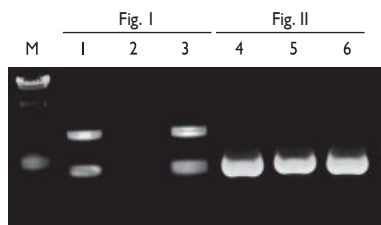
### [ Performance ]



#### Comparison of RNA Extraction

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



#### RNA Extraction free of genomic DNA contamination

Fig. I. Genomic DNA contamination was tested by PCR. Eluate, including total RNA of RAW264.7 cell, extracted 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

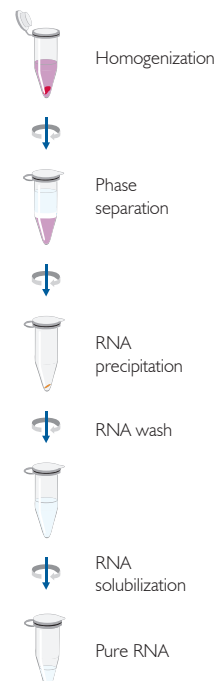
Lane 3 : PCR of the eluate from Supplier B for liquid sample

Fig. II. Total RNA was extracted from RAW264.7 cell using RiboEx™ LS and other 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



Products	Scale	Size	Cat. No.	Type
RiboEx™ LS	mini	100 ml	302-001	solution
RiboEx™ LS	mini	200 ml	302-002	solution

## Hybrid-R™

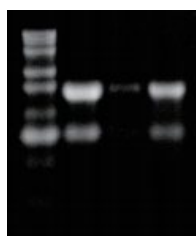
For the isolation of total RNA from tissues and cultured cells

### [ Features ]

- Combination of phenol/guanidine-based sample lysis and silica-membrane purification
- Rapid and simple procedure : ~30 min
- No genomic DNA contamination, no ethanol precipitation
- Sample size : Up to 100 mg tissue  
Up to  $1 \times 10^7$  cultured cells
- Accurate and consistent yield from animal tissue, cultured cell line, plant, *E.coli*, and various biological samples
- High yield and purity
- Ready for use in RT-PCR, northern blotting, dot blotting, *in vitro* translation, molecular cloning, Real-time PCR, and other analytical procedures

### [ Performance ]

M 1 2 3

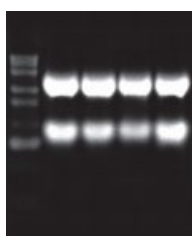


#### Comparison of bacterial RNA Extraction

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

M 1 2 3 4

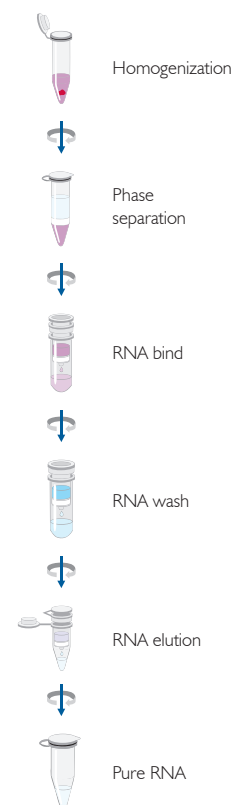


#### Comparison of RNA Extraction from rat liver

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

Products	Scale	Size	Cat. No.	Type
Hybrid-R™	mini	100	305-101	spin



## Hybrid-R™ Blood RNA

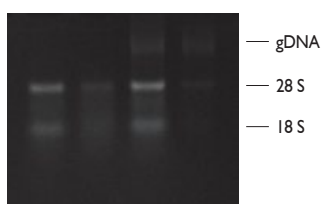
For the isolation of total RNA from whole blood

### [ Features ]

- Combination of phenol/guanidine-based sample lysis and silica-membrane purification
- Rapid and simple procedure : ~30 min
- No genomic DNA contamination, no ethanol precipitation
- EzPure™ Filter system for removal of small amount of contaminated DNA and other blood contaminants
- Sample size : 100~250  $\mu$ l/prep
- Accurate and consistent yield from whole blood
- High yield and purity
- Ready for use in RT-PCR, northern blotting, dot blotting, *in vitro* translation, molecular cloning, Real-time PCR, and other analytical procedures

### [ Performance ]

1 2 3 4

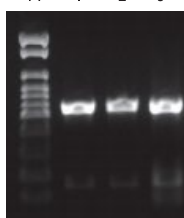


#### Comparison of RNA Extraction

Total RNA was extracted from whole blood using several RNA extraction kit of different companies. The extracted total RNA was resolved on a 1% formaldehyde gel.

Lane 1 : Total RNA from Hybrid-R™ Blood product for 250  $\mu$ l of whole blood  
Lane 2 : Total RNA from Supplier A product for 500  $\mu$ l of whole blood  
Lane 3 : Total RNA from Supplier B product for 500  $\mu$ l of whole blood  
Lane 4 : Total RNA from Supplier C product for 250  $\mu$ l of whole blood

M 1 2 3



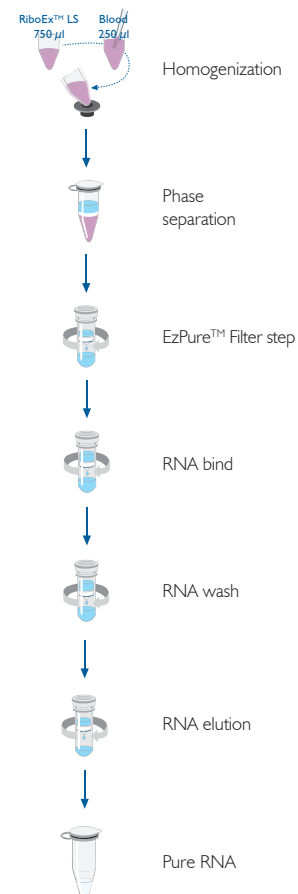
#### RNA Extraction free of genomic DNA contamination

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	Scale	Size	Cat. No.	Type
Hybrid-R™ Blood RNA	mini	50	315-150	spin



## Hybrid-R™ miRNA

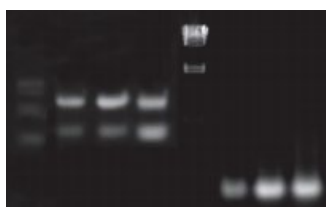
For purification of large and small RNA separately from cultured cells or animal tissues

### [ Features ]

- Combination of phenol/guanidine-based sample lysis and silica-membrane purification
- Rapid and simple procedure : ~30 min
- Purification of large and small RNA from animal tissues or cultured cells simultaneously
- No genomic DNA contamination, no ethanol precipitation
- Recovery range : Large RNA : >200 nucleotides  
Small RNA : <200 nucleotides
- Sample size : Up to 50 mg tissue, Up to  $1 \times 10^7$  cultured cells
- High yield and purity
- Ready for use in RT-PCR, northern blotting, dot blotting, *in vitro* translation, cloning, Real-time PCR, and other analytical procedures

### [ Performance ]

M1 1 2 3 M2 4 5 6



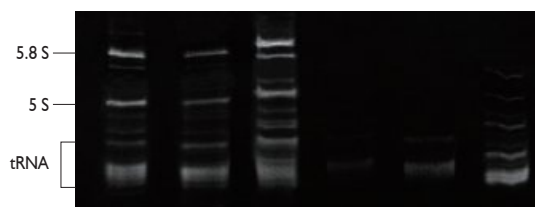
#### Simultaneous Extraction of Large and Small RNA

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  
Lane 1 : Large RNA from CHO cell  
Lane 2 : Large RNA from RAW264.7 cell  
Lane 3 : Large RNA from rat lung  
M2 : Lambda-HindIII  
Lane 4 : Small RNA from CHO cell  
Lane 5 : Small RNA from RAW264.7 cell  
Lane 6 : Small RNA from rat lung

1 2 3 4 5 6

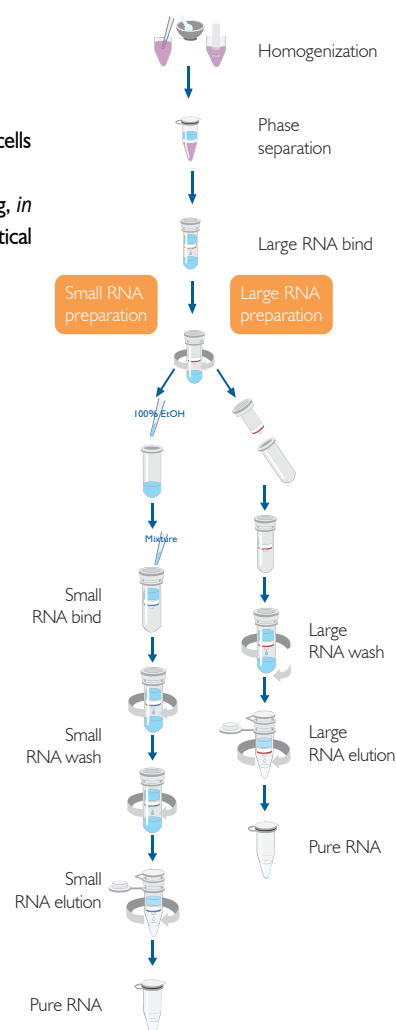


#### Comparison of miRNA Extraction

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



## Ribospin™

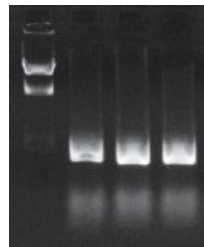
For total RNA isolation from animal tissues and cultured cells

### [ Features ]

- Silica-based membrane format for RNA purification from tissues and cultured cells
- Rapid and simple procedure : ~15 min
- No phenol/chloroform extraction, no ethanol precipitation
- Optimized buffer system for minimizing genomic DNA contamination in RNA Extraction
- Sample size : Up to 25 mg tissue,  
Up to  $5 \times 10^6$  cultured cells
- Typical yield : Up to 60  $\mu\text{g}$  / 10 mg liver tissue,  
Up to 20  $\mu\text{g}$  /  $1 \times 10^6$  cultured cells
- High purity :  $A_{260}/A_{230} > 2.0$ ,  $A_{260}/A_{280} > 1.8$
- 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

### [ Performance ]

M 1 2 3

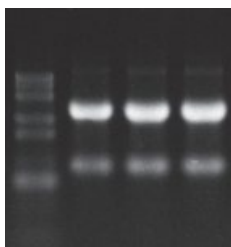


#### Comparison of RNA Extraction from RAW264.7 cell

Total RNA was extracted from RAW264.7 cell using Ribospin™ and other 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™

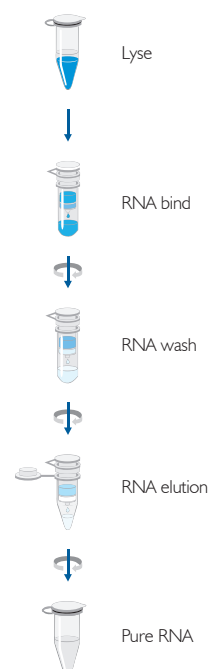
M 1 2 3



#### Comparison of RNA Extraction from CHO cell

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™



Products	Scale	Size	Cat. No.	Type
Hybrid-R™ miRNA	mini	50	325-150	spin
Ribospin™	mini	50	304-150	spin

## Ribospin™ II

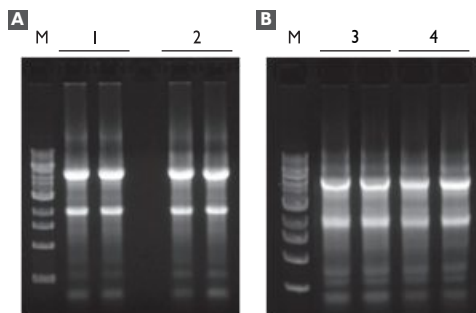
For total RNA isolation from animal tissues and cultured cells

### [ Features ]

- Silica-based membrane format for RNA purification from tissues and cultured cells
- Rapid and simple procedure : ~30 min
- No phenol/chloroform extraction, no ethanol precipitation
- DNase I included for pure RNA (on-column digestion under 10 minutes)
- Sample size : Up to 30 mg tissue,  
Up to  $1 \times 10^7$  cultured cells

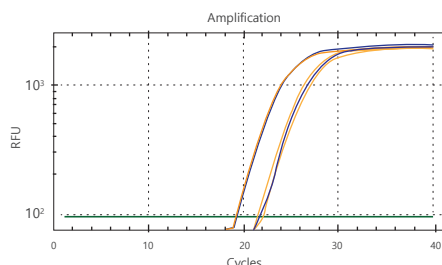
- Typical yield : Up to  $40 \mu\text{g}$  / 10 mg liver tissue,  
Up to  $40 \mu\text{g}$  /  $1 \times 10^7$  cultured cells
- High purity :  $A_{260}/A_{230} > 2.0$ ,  $A_{260}/A_{280} > 1.8$
- Ready for use in RT-PCR, Real-time PCR, automated sequencing, *in vitro* translation, molecular cloning, labeling, microarray, hybridization, RNase protection assays, and other analytical procedures

### [ Performance ]



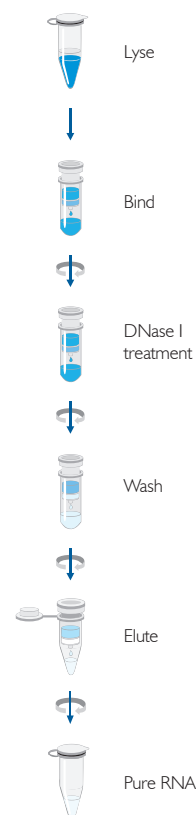
#### Comparison of RNA Extraction from cell and tissue

Total RNA was extracted from CHO (Chinese Hamster Ovary-Panel A) cell and rat liver (10 mg/prep-Panel B) cell using Ribospin™ II and Supplier A kit. The extracted RNA was loaded on a 1% agarose gel. Lane 1, 3 : Total RNA from Ribospin™ II  
Lane 2, 4 : Total RNA from Supplier A



#### Real-time qPCR Amplification

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



Products	Scale	Size	Cat. No.	Type
Ribospin™ II	mini	50	314-150	spin
Ribospin™ II	mini	300	314-103	spin

## Ribospin™ vRD/vRD Plus/vRD II

For viral RNA/DNA isolation from various samples

### [ Features ]

- Silica-based membrane format for viral RNA and DNA purification from viral infected samples
- Rapid and simple procedure : ~20 min
- No phenol / chloroform extraction, no ethanol precipitation
- Efficient purification of nucleic acid from small amounts of sample
  - Using Carrier RNA (vRD Plus)
  - Using Carrier RNA and micro column types (vRD II)

- Sample size
  - Up to 300  $\mu\text{l}$ /prep (vRD, vRD Plus)
  - Up to 100  $\mu\text{l}$ /prep (vRD II)
- High yield and purity
- Ready for use in viral infection diagnosis, virus species analysis, and other related virology researches

### [ Performance ]

M 1 2 3 4 5 6 7



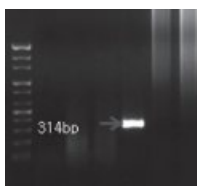
#### Viral DNA Extraction

Lane M : Lambda-HindIII marker  
Lane 1 : PCR of DNA extracted from  $6 \times 10^4$  pfu HSV-I  
Lane 2 : PCR of DNA extracted from  $6 \times 10^3$  pfu HSV-I  
Lane 3 : PCR of DNA extracted from  $6 \times 10^2$  pfu HSV-I  
Lane 4 : PCR of DNA extracted from  $6 \times 10^1$  pfu HSV-I  
Lane 5 : PCR of DNA extracted from 6 pfu HSV-I  
Lane 6 : Negative control of a purification procedure  
Lane 7 : Negative control of PCR

#### \* DNA virus (HSV-I)

Total DNA was extracted from gradually diluted HSV-I sample using Ribospin™ vRD. And then the DNA of HSV-I was amplified by PCR and confirmed by electrophoresis.

M 1 2 3 4 5 6

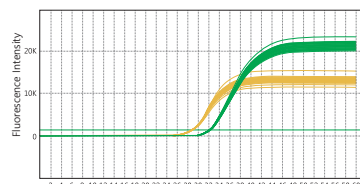
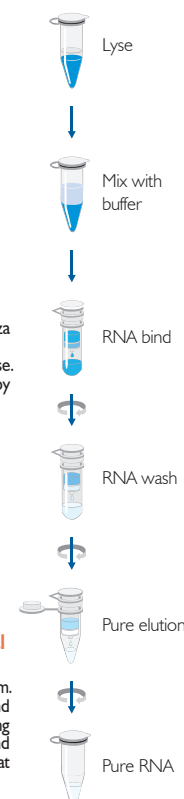


#### Viral RNA Extraction

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

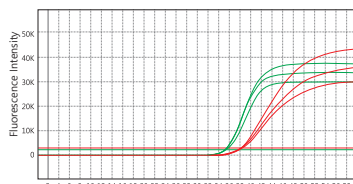
Lane M : 100 bp ladder  
Lane 1~3 : First PCR result  
Lane 4~6 : Nest PCR result  
Lane 1, 4 : HPIV-I

#### \* RNA virus (HPIV-I)



#### Stable and Consistent Extraction

Consistency test of Ribospin™ vRD II. HIV positive was diluted to 1,000 IU/ml with human serum. Extraction tests of HIV samples of 24 repeats were performed with Ribospin™ vRD II kit and the consistent result was confirmed by Real-time PCR. Green is HIV signal and yellow is IC (Internal Control) signal.



#### Simultaneous Extraction of Viral DNA and RNA

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

Products	Scale	Size	Cat. No.	Type
Ribospin™ vRD	mini	50	302-150	spin
Ribospin™ vRD (Plus)	mini	50	312-150	spin
Ribospin™ vRD II	mini	50	322-150	spin



## Ribospin™ Plant

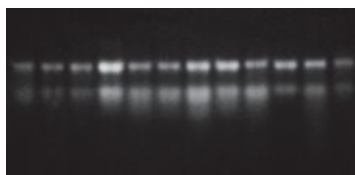
For total RNA isolation from various plant samples

### [ Features ]

- Silica-based membrane format for RNA purification from various plant species
- Rapid and simple procedure : ~25 min
- Complete removal of plant-derived polysaccharides and polyphenolic compounds
- Efficient removal of impurities using the EzPure™ Filter

### [ Performance ]

1 2 3 4 5 6 7 8 9 10 11 12



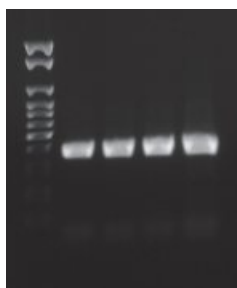
#### Total RNA Extraction from a variety of plant species

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 *Lycopersicon esculentum*  
 Lane 7 : Leaf RNA from *Nicotiana tabacum*  
 Lane 8 : Leaf RNA from *Lactuca sativa*  
 Lane 9 : Leaf RNA from *Cucumis sativus L.*  
 Lane 10 : Root RNA from *Plantago asiatica*  
 Lane 11 : Root RNA from *Nicotiana tabacum*  
 Lane 12 : Fruit RNA from *Citrus grandis osbek*

- Preparation time : ~25 min
- 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

M 1 2 3 4



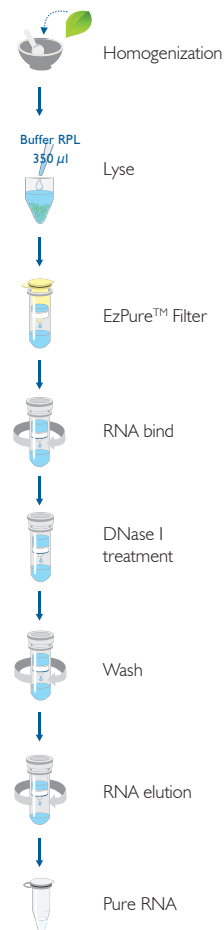
#### PCR Amplification

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  $\mu$ l  
 Lane 2 : cDNA 2  $\mu$ l  
 Lane 3 : cDNA 3  $\mu$ l  
 Lane 4 : cDNA 4  $\mu$ l

Products	Scale	Size	Cat. No.	Type
Ribospin™ Plant	mini	50	307-150	spin



## Ribospin™ Seed/Fruit

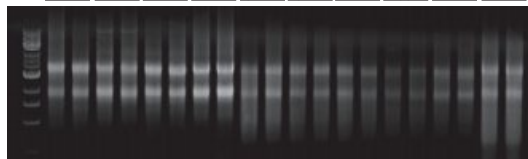
For total RNA isolation from various seed and fruit samples

### [ Features ]

- Silica-based membrane format for RNA purification from various plant species
- Rapid and simple procedure : ~30 min
- No phenol/chloroform extraction, no ethanol precipitation
- Complete removal of plant-derived polysaccharides and polyphenolic compounds
- Efficient removal of impurities using the EzPure™ Filter

### [ Performance ]

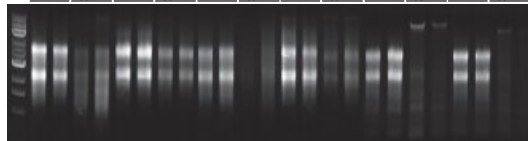
M Lettuce Kidney bean Sweet pea Spinach Apricot Beet Pepper Tomato Daikon



#### Total RNA Extraction from a variety of seed samples

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

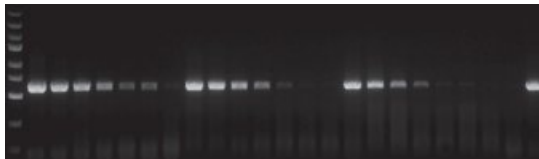
Lettuce Peanut Pepper Kidney bean Tomato Water melon  
 M GeneAll Supplier A GeneAll Supplier A GeneAll Supplier A GeneAll Supplier A GeneAll Supplier A GeneAll Supplier A



**Comparison of RNA Extraction from a variety of seed samples**  
 Total RNA was isolated from five different kinds of seeds using Ribospin™ Seed/Fruit RNA miniprep kit and Supplier A kit. The extracted RNA was confirmed by electrophoresis. Lane M : 250 bp DNA ladder marker

- No genomic DNA contamination : Treatment of DNase I
- Sample size : Up to 100 mg seed or fruit
- High purity :  $A_{260}/A_{230} > 2.0$ ,  $A_{260}/A_{280} > 1.8$
- 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

Melon seed Pepper seed Soybean  
 M 10<sup>0</sup> 10<sup>1</sup> 10<sup>2</sup> 10<sup>3</sup> 10<sup>4</sup> 10<sup>5</sup> 10<sup>6</sup> 10<sup>7</sup> 10<sup>8</sup> 10<sup>9</sup> 10<sup>10</sup> 10<sup>11</sup> 10<sup>12</sup> 10<sup>13</sup> 10<sup>14</sup> 10<sup>15</sup> 10<sup>16</sup> 10<sup>17</sup> 10<sup>18</sup> 10<sup>19</sup> 10<sup>20</sup> NC PC

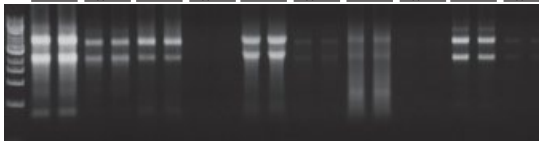


#### Plant pathogen Extraction

RT-PCR was applied for CGMMV detection from infected seeds. The template RNA was isolated by Ribospin™ Seed/Fruit RNA miniprep kit and one-step RT-PCR was adopted for RNA virus detection. The sensitivity of PCR was identified by serial diluted template detecting more than 10<sup>4</sup> dilution factor. The PCR product was confirmed by electrophoresis.

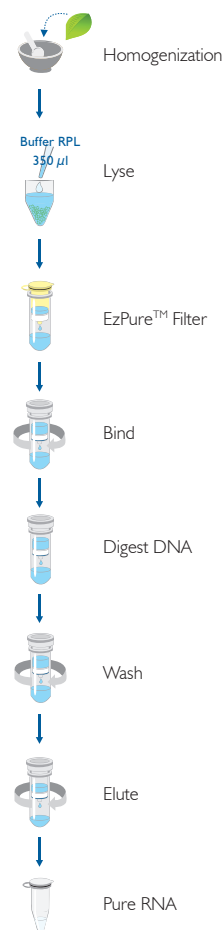
Lane M : 250 bp DNA ladder marker  
 Lane NC : Negative control Lane PC : Positive control

Mango Strawberry Banana Tomato Apple  
 M GeneAll Supplier B GeneAll Supplier B GeneAll Supplier B GeneAll Supplier B GeneAll Supplier B



**Comparison of RNA Extraction from a variety of fruits samples**  
 Total RNA was isolated from five kinds of fruits using Ribospin™ Seed/Fruit RNA miniprep kit and Supplier B kit. The extracted RNA was confirmed by electrophoresis. Lane M : 250 bp DNA ladder marker

Products	Scale	Size	Cat. No.	Type
Ribospin™ Seed/Fruit	mini	50	317-150	spin



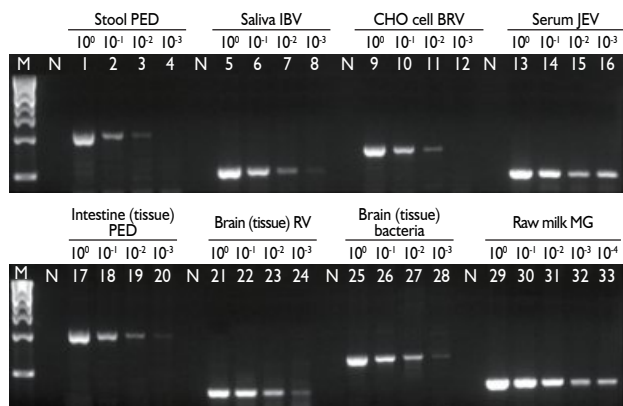
## Ribospin™ Pathogen/TNA

For pathogen DNA/RNA isolation from various samples

### [ Features ]

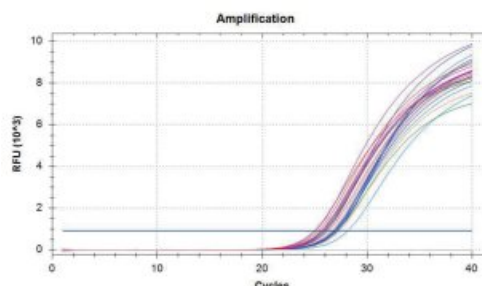
- Silica-based membrane format for pathogen and total nucleic acids (TNA) purification from various samples
  - Rapid and simple procedure
  - No phenol/chloroform extraction, no ethanol precipitation
  - Sample size : Up to 20 mg tissue, Up to  $5 \times 10^6$  cultured cells, Up to 200  $\mu$ l whole blood, Up to 50 mg stool, Up to 1 ml raw milk
  - High yield and purity
- Typical yield of TNA :  
20~130  $\mu$ g / 20 mg animal tissue  
60~90  $\mu$ g /  $5 \times 10^6$  cultured cell  
2~20  $\mu$ g / 200  $\mu$ l whole blood  
10~30  $\mu$ g / 50 mg stool  
2~4  $\mu$ g / 1 ml raw milk
  - Ready for use in PCR, qPCR, RT-PCR, or any downstream application without further manipulation

### [ Performance ]

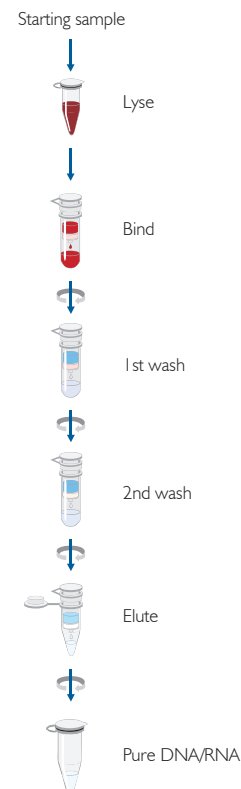


#### Pathogen Nucleic Acid Extraction and Amplification

Nucleic acids serially diluted from  $10^0$  to  $10^{-3}$  or  $10^{-4}$ , extracted with Ribospin™ Pathogen/TNA from various samples, were subjected to RT-PCR to detect viruses and bacteria.  
Lane M : GENESTA™ 1 kb DNA Ladder  
Lane 1~4 : RT-PCR for PED detection of nucleic acid extracted from stool  
Lane 5~8 : RT-PCR for IBV detection of nucleic acid extracted from saliva  
Lane 9~12 : RT-PCR for BRV detection of nucleic acid extracted from CHO cell  
Lane 13~16 : RT-PCR for JEV detection of nucleic acid extracted from serum  
Lane 17~20 : RT-PCR for PED detection of nucleic acid extracted from intestine tissue  
Lane 21~24 : RT-PCR for RV detection of nucleic acid extracted from brain tissue  
Lane 25~28 : RT-PCR for bacteria detection of nucleic acid extracted from brain tissue  
Lane 29~33 : RT-PCR for MG detection of nucleic acid extracted from raw milk



No.	Sample ID	#1	#2	#3	Average Ct
1	Human blood	27.39	27.14	26.59	27.04
2	Pig blood	25.97	27.19	26.05	26.40
3	Cow blood	27.06	26.95	26.79	26.93
4	FBS	27.00	27.21	26.17	26.79
5	FBS + Carrier RNA	25.15	25.82	25.68	25.75
6	Human serum	27.16	27.05	28.20	27.47
7	Human serum + Carrier RNA	25.83	25.62	26.33	25.93
8	P. Control	26.04	25.04	25.38	25.49
9	N. Control	-	-	-	-



Products	Scale	Size	Cat. No.	Type
Ribospin™ Pathogen/TNA	mini	50	341-150	spin
Ribospin™ Pathogen/TNA	mini	250	341-152	spin

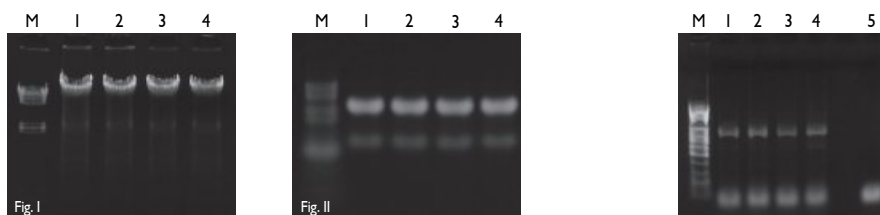
## Allspin™

For total RNA & DNA isolation from tissues and cultured cells

### [ Features ]

- Silica-based membrane format for purification of high quality total DNA and RNA from a single sample of tissue or cultured cells simultaneously
  - Rapid and simple procedure : ~30 min
  - No phenol/chloroform extraction, no ethanol precipitation
  - Sample size : Up to 30 mg tissue, Up to  $1 \times 10^7$  cultured cells
- Typical yield of RNA : Up to 60  $\mu$ g / 10 mg liver tissue  
Up to 20  $\mu$ g /  $1 \times 10^6$  cultured cells
  - Typical yield of DNA : Up to 25  $\mu$ g / 10 mg liver tissue  
Up to 10  $\mu$ g /  $1 \times 10^6$  cultured cells
  - Directly applicable to various downstream application related to DNA and RNA

### [ Performance ]



#### Simultaneous Extraction of genomic DNA and total RNA

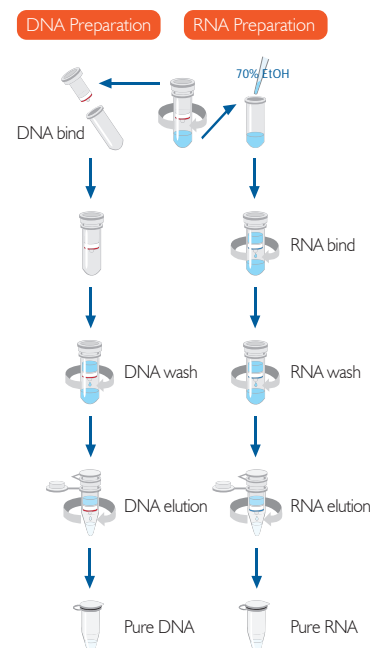
Genomic DNA and total RNA were purified from RAW264.7 cells using Allspin™ and Supplier A  
Fig. I. Genomic DNA were analysed on a 1% agarose gel.  
Lane M : Lambda-HindIII marker  
Lane 1, 2 : Genomic DNA from Allspin™ Lane 3, 4 : Genomic DNA from Supplier A

Fig. II. Total RNA was analysed on a 1% formaldehyde agarose gel.

Lane M : 0.5~10 kb RNA ladder  
Lane 1, 2 : Total RNA from Allspin™ Lane 3, 4 : Total RNA from Supplier A

#### Comparison of RNA Extraction

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



Products	Scale	Size	Cat. No.	Type
Allspin™	mini	50	306-150	spin

## Riboclear™ (Plus)

For RNA cleanup from various RNA samples

### [ Features ]

- Cleanup for preparation of high quality RNA
- Rapid and simple procedure : ~6 min (Riboclear™), ~17 min (Riboclear™ Plus)
- Complete removal of salts and enzymes
- No use of organic solvents, no ethanol precipitation

### [ Performance ]

M 1 2 3 4 5 6 7 8 9 10 11



#### Consistent RNA Purification

The consistency of the purified RNA using Riboclear™ was confirmed by electrophoresis.

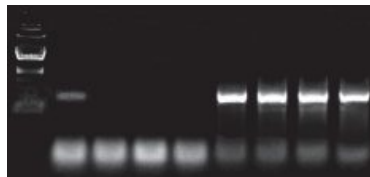
M : Lambda-HindIII

Lane 1 : Total RNA from Hybrid-R™

Lane 2~11 : The purified RNA from Riboclear™

- Efficient removal of genomic DNA : Including DNase I (Riboclear™ Plus only)
- Concentrated RNA eluate : Using micro column (Riboclear™ Plus only)
- High recovery rate : ~95%
- Ready for use in downstream applications which requires high purity RNA

M 1 2 3 4 5 6 7 8



#### RT-PCR Amplification

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.

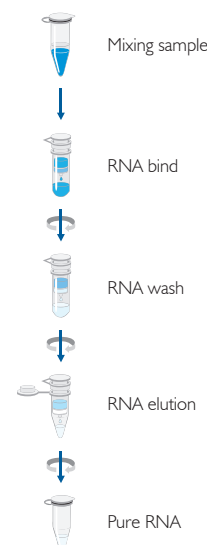
M : Lambda-HindIII

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	Scale	Size	Cat. No.	Type
Riboclear™	mini	50	303-150	spin
Riboclear™ Plus	mini	50	313-150	spin

## RiboSaver™

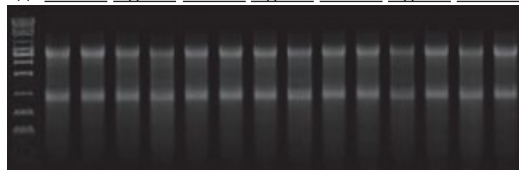
For RNA stabilization from biological specimens

### [ Features ]

- Preservation solution to stabilize cellular RNA and DNA in tissues and cultured cells
- Immediate stabilization and subsequent transport or storage
- Convenient and safe handling at room temperature
- No need for liquid nitrogen or dry ice
- Compatible with most RNA isolation methods

### [ Performance ]

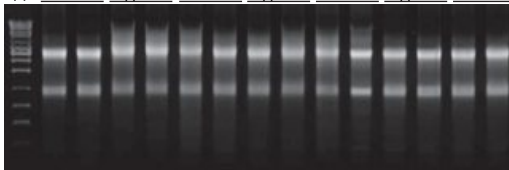
M Fresh 37°C 1 day Supplier A GeneAll 25°C 7 days Supplier A GeneAll 4°C 30 days Supplier A GeneAll



#### Comparison of RNA Extraction from HeLa cells

Comparison of RiboSaver™ with other company. To check the extracted RNA of various condition (temperature and period), total RNA was extracted from HeLa cells stored in RiboSaver™.

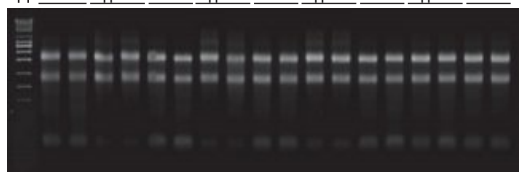
M Fresh 37°C 1 day Supplier A GeneAll 25°C 7 days Supplier A GeneAll 4°C 30 days Supplier A GeneAll



#### Comparison of RNA Extraction from rat lung tissue

Comparison of RiboSaver™ with other company. To check the extracted RNA of various condition (temperature and period), total RNA was extracted from lung tissue (rat) stored in RiboSaver™.

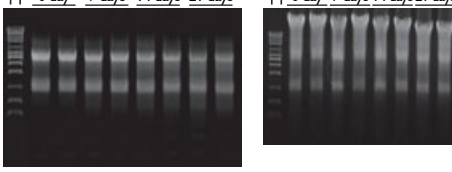
M Fresh 37°C 1 day Supplier A GeneAll 25°C 7 days Supplier A GeneAll 4°C 30 days Supplier A GeneAll -20°C 50 day Supplier A GeneAll



#### Comparison of RNA Extraction from E. coli (DH5α)

Comparison of RiboSaver™ with other company. To check the extracted RNA of various condition (temperature and period), total RNA was extracted from E. coli (DH5α) stored in RiboSaver™.

M 0 day 7 days 14 days 21 days RNA M 0 day 7 days 14 days 21 days DNA



#### Nucleic Acid(DNA, RNA) Extraction

To check the conservativeness of nucleic acid during various period, nucleic acid (DNA, RNA) was extracted from Jurket cells stored in RiboSaver™.

Products	Scale	Size	Cat. No.	Type
RiboSaver™	mini	100	351-001	solution

# Automated Nucleic Acid Extraction System

# ALLEX<sup>®</sup> 64

## Automated Nucleic Acid Extraction System

### [ Introducing the ALLEX<sup>®</sup> 64 System ]

ALLEX<sup>®</sup>64 is a compact but comprehensive Automated Nucleic Acid Extraction System, crafted by the exceptional expertise of GeneAll. This powerhouse enables rapid extraction of up to 64 samples in just 10 minutes, enhancing laboratory workflows.

In conjunction with dedicated reagent kits, it delivers high yield and purity of DNA, RNA or total nucleic acids from a variety of samples. The extracted nucleic acids are compatible with countless downstream applications including PCR, qPCR, qRT-PCR and sequencing.

### [ Key Features ]

**Rapid** : Nucleic acid extraction in 10 minutes

**Scalable for low or high throughput** : Extraction of 1 to 64 samples in individual tubes or 96-well plates

**Safe** : Protection against contamination with HEPA filter, UV lamp and ventilation fan

**Efficient** : Sample ID tracking and run history monitoring



### [ Technical Specification ]

Technology	Magnetic beads
Throughput	1 to 64 samples per run
Run time	10 minutes
Starting volume	Up to 400 $\mu$ l
Dimension (W x D x H)	420 x 599 x 440 mm
Weight	36.5 kg
Display	10.1" TFT LCD touch screen
Power input	200~240 Vac, 5 A, 50/60 Hz
Features	Auto Cassette Loader Auto Protocol Loading Onboard Barcode Scanner Reverse Loading Prevention Emergency Stop & Resume Hot Air Exhaust HEPA Filter UV Lamp Auto Mechanical Calibration Progress Bar Status Circle USB Interface Network Support with TCP/IP, Bluetooth, RS-232C

Category	Cat. No.	Products
Instrument	AEX064	ALLEX <sup>®</sup> 64 Automated Nucleic Acid Extraction System
	931-048	ALLEX <sup>®</sup> Genomic DNA Kit [48T]
Extraction Kits	931-096	ALLEX <sup>®</sup> Genomic DNA Kit [96T]
	934-048	ALLEX <sup>®</sup> Viral DNA/RNA Kit [48T]
	934-096	ALLEX <sup>®</sup> Viral DNA/RNA Kit [96T]
	935-048	ALLEX <sup>®</sup> Blood DNA Kit [48T]
	935-096	ALLEX <sup>®</sup> Blood DNA Kit [96T]
	937-048	ALLEX <sup>®</sup> Plant DNA/RNA Kit [48T]
	937-096	ALLEX <sup>®</sup> Plant DNA/RNA Kit [96T]
	948-048	ALLEX <sup>®</sup> Fecal DNA/RNA Kit [48T]
	948-096	ALLEX <sup>®</sup> Fecal DNA/RNA Kit [96T]

# GENTi™ ADVANCED

## Automated Nucleic Acid Extraction System



### [ Introducing the GENTi™ ADVANCED System ]

GENTi™ ADVANCED is an advanced automated nucleic acid extraction system designed to handle a diverse range of samples. It harnesses the advantages of proven magnetic bead technology while accommodating up to 32 samples per run.

GENTi™ ADVANCED provides three pre-programmed protocols (Fast, Standard and NGS-grade) for users to choose from, ensuring compatibility with their sample types and downstream applications.

With fully integrated and versatile pre-filled kits, GENTi™ ADVANCED ensures high-quality nucleic acid extraction across a wide range of downstream applications, including PCR, qPCR, qRT-PCR, and sequencing.

### [ Key Features ]

**Flexible** : Three pre-programmed kit protocols

**Versatile** : Suitable for a wide variety of samples such as blood, cell-free fluids, cells, tissues, swab and urines

**Convenience** : Ready-to-use pre-filled reagent

**Efficient** : Conically designed plate/tube, magnetic rod cover and heating block

### [ Technical Specification ]

Technology	Magnetic beads
Throughput	1 to 32 samples per run
Run time	Fast : (17' 46") / Standard : (29' 35") / NGS-grade : (42' 12")
Starting volume	Up to 400 $\mu$ l
Dimension (W x D x H)	350 x 430 x 435 mm
Weight	32.5 kg
Display	8" TFT LCD touch screen
Power input	100~240 Vac, 600 W, 50/60 Hz
Features	UV lamp Self-check start USB update

Category	Cat. No.	Products
Instrument	GTI032A	GENTi™ Advanced Automatic Extraction Equipment
	901-096A	GENTi™ Advanced Genomic DNA Extraction Kit [96T]
	901-048A	GENTi™ Advanced Genomic DNA Extraction Kit [48T]
	902-096A	GENTi™ Advanced Viral DNA/RNA Extraction Kit [96T]
	902-048A	GENTi™ Advanced Viral DNA/RNA Extraction Kit [48T]
	903-096A	GENTi™ Advanced Blood DNA Extraction Kit [96T]
	903-048A	GENTi™ Advanced Blood DNA Extraction Kit [48T]
	904-096A	GENTi™ Advanced Plant DNA/RNA Extraction Kit [96T]
	904-048A	GENTi™ Advanced Plant DNA/RNA Extraction Kit [48T]
	906-096A	GENTi™ Advanced LMO Extraction Kit [96T]
	906-048A	GENTi™ Advanced LMO Extraction Kit [48T]
	913-096A	GENTi™ Advanced Fecal DNA/RNA Extraction Kit [96T]
	913-048A	GENTi™ Advanced Fecal DNA/RNA Extraction Kit [48T]
	Extraction Kits	

Products	Scale	Size	Cat. No.	Type
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**GeneAll® Hybrid-Q™** for rapid preparation of plasmid DNA

Plasmid Rapidprep	mini	50	100-150	spin
		200	100-102	

**GeneAll® Expres™** for preparation of plasmid DNA

Plasmid SV	mini	50	101-150	spin/
		200	101-102	vacuum
	Midi	26	101-226	spin/
		50	101-250	
		100	101-201	

**GeneAll® Exfection™** for preparation of transfection-grade plasmid DNA

Plasmid LE (Low Endotoxin)	mini	50	111-150	spin/
		200	111-102	vacuum
	Midi	26	111-226	spin/
100		111-201	vacuum	
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/
		200	102-102	vacuum
PCR SV	mini	50	103-150	spin/
		200	103-102	vacuum
CleanUp SV	mini	50	113-150	spin/
		200	113-102	vacuum
Combo GP	mini	50	112-150	spin/
		200	112-102	vacuum

**GeneAll® Exgene™** for isolation of total DNA

Tissue SV	mini	100	104-101	spin/	
		250	104-152	vacuum	
		26	104-226	spin/	
	Midi	100	104-201	vacuum	
		MAXI	10	104-310	spin/
			26	104-326	vacuum
Tissue plus! SV	mini	100	109-101	spin/	
		250	109-152	vacuum	
		26	109-226	spin/	
	Midi	100	109-201	vacuum	
		MAXI	10	109-310	spin/
			26	109-326	vacuum
Blood SV	mini	100	105-101	spin/	
		250	105-152	vacuum	
		26	105-226	spin/	
	Midi	100	105-201	vacuum	
		MAXI	10	105-310	spin/
			26	105-326	vacuum
Cell SV	mini	100	106-101	spin/	
		250	106-152	vacuum	
		10	106-310	spin/	
	MAXI	26	106-326	vacuum	
		mini	100	108-101	spin/
			250	108-152	vacuum
Clinic SV	Midi	26	108-226	spin/	
		100	108-201	vacuum	
	MAXI	10	108-310	spin/	
		26	108-326	vacuum	
Genomic DNA micro		50	118-050	spin	
Plant SV	mini	100	117-101	spin/	
		250	117-152	vacuum	
		26	117-226	spin/	
	Midi	100	117-201	vacuum	
		MAXI	10	117-310	spin/
			26	117-326	vacuum
Soil DNA mini	mini	50	114-150	spin	
Stool DNA mini	mini	50	115-150	spin	
Stool-Bead DNA mini	mini	50	115-151	spin	
Viral DNA/RNA	mini	50	128-150	spin	
FFPE Tissue DNA	mini	50	138-150	spin	
		250	138-152		

Products	Scale	Size	Cat. No.	Type
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**GeneAll® GenEx™** for isolation of total DNA without spin column

GenEx™ Blood	Sx	100	220-101	solution
		500	220-105	
	Lx	100	220-301	solution
GenEx™ Cell	Sx	100	221-101	solution
		500	221-105	
	Lx	100	221-301	solution
GenEx™ Tissue	Sx	100	222-101	solution
		500	222-105	
	Lx	100	222-301	solution
GenEx™ Plant	Sx	100	227-101	solution
		Mx	100	
	Lx	100	227-301	solution
GenEx™ Plant Plus	Sx	100	228-101	solution
		Mx	50	
	Lx	20	228-320	solution

**GeneAll® DirEx™ series** for preparation of PCR-template without extraction

DirEx™		100	250-101	solution
DirEx™ Fast-Tissue	96 T		260-011	solution
DirEx™ Fast-Cultured cell	96 T		260-021	solution
DirEx™ Fast-Whole blood	96 T		260-031	solution
DirEx™ Fast-Blood stain	96 T		260-041	solution
DirEx™ Fast-Hair	96 T		260-051	solution
DirEx™ Fast-Buccal swab	96 T		260-061	solution
DirEx™ Fast-Cigarette	96 T		260-071	solution

**GeneAll® RNA series** for preparation of total RNA

RiboEx™	mini	100	301-001	solution
		200	301-002	
Hybrid-R™	mini	100	305-101	spin
Hybrid-R™ Blood RNA	mini	50	315-150	spin
Hybrid-R™ miRNA	mini	50	325-150	spin
RiboEx™ LS	mini	100	302-001	solution
		200	302-002	
Riboclear™	mini	50	303-150	spin
Riboclear™ Plus	mini	50	313-150	spin
Ribospin™	mini	50	304-150	spin
Ribospin™ II	mini	50	314-150	spin
		300	314-103	
Ribospin™ vRD	mini	50	302-150	spin
Ribospin™ vRD Plus	mini	50	312-150	spin
Ribospin™ vRD II	mini	50	322-150	spin
Ribospin™ Plant	mini	50	307-150	spin
Ribospin™ Seed/Fruit	mini	50	317-150	spin
Ribospin™ Pathogen/TNA	mini	50	341-150	spin
		250	341-152	
Allspin™	mini	50	306-150	spin
RiboSaver™	mini	100	351-001	solution

**GeneAll® AmpONE™** for PCR amplification

Taq DNA polymerase		250 U	501-025	(2.5 U/μl)
		500 U	501-050	
		1,000 U	501-100	
Taq Premix		20 μl x 96 tubes	526-200	solution
		50 μl x 96 tubes	526-500	

**GeneAll® AmpMaster™** for PCR amplification

Taq Master mix		0.5 ml x 2 tubes	541-010	solution
		0.5 ml x 10 tubes	541-050	solution

Products	Scale	Size	Cat. No.	Type
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**GeneAll® HyperScript™** for Reverse Transcription

Reverse Transcriptase		10,000 U	601-100	solution
RT Master mix		0.5 ml x 2 tubes	601-710	solution
One-step RT-PCR Master mix		0.5 ml x 2 tubes	602-110	solution
One-step RT-PCR Premix		20 μl x 96 tubes	602-102	solution

**GeneAll® RealAmp™** for qPCR amplification

SYBR qPCR Master mix (2X, Low ROX)	200 rxn	2 ml	801-020	solution
	500 rxn	5 ml	801-050	
SYBR qPCR Master mix (2X, High ROX)	200 rxn	2 ml	801-021	solution
	500 rxn	5 ml	801-051	

**GeneAll® Protein series**

ProteinEx™ Animal cell/tissue		100 ml	701-001	solution
PAGESTA™ Reducing 5X SDS-PAGE Sample Buffer		1 ml x 10 tubes	751-001	solution

**GeneAll® GENTz™ ADVANCED** Newly designed automated extraction system

Automatic extraction equipment			GTI032A	system
Genomic DNA		48	901-048A	tube
		96	901-096A	plate
Viral DNA/RNA		48	902-048A	tube
		96	902-096A	plate
Blood DNA		48	903-048A	tube
		96	903-096A	plate
Plant DNA/RNA		48	904-048A	tube
		96	904-096A	plate
LMO		48	906-048A	tube
		96	906-096A	plate
Fecal DNA/RNA		48	913-048A	tube
		96	913-096A	plate

**GeneAll® ALLEX® 64** Compact yet Comprehensive automated extraction system

Automatic extraction equipment			AEX064	system
Genomic DNA		48	931-048A	tube
		96	931-096A	plate
Viral DNA/RNA		48	934-048A	tube
		96	934-096A	plate
Blood DNA		48	935-048A	tube
		96	935-096A	plate
Plant DNA/RNA		48	937-048A	tube
		96	937-096A	plate
Fecal DNA/RNA		48	948-048A	tube
		96	948-096A	plate

