

GE Healthcare

Purify. Amplify. Simplify.

illustra RNAspin
simplifies your total
RNA purification



DOMINIQUE DUTSCHER

illustra

Premium quality RNA isolation kits

Our illustra™ RNA purification kits are designed to ensure that you get the **reproducibility, yield and purity** you need, with every experiment. illustra kits accommodate a diverse range of application requirements and sample types, delivering RNA that can be used for downstream applications, such as qRT-PCR and microarray analysis.

All the illustra RNA isolation protocols have been designed to retrieve high-quality RNA from the cells, subcellular compartments and protein coat with minimal degradation.

illustra RNAspin Mini Kit for sensitive downstream applications

- Total RNA isolation from diverse sample types
- DNase I included for greater cost savings and for maximum yield of high-quality RNA
- Prefilters included to reduce lysate viscosity
- Results from even small amounts of precious sample
- Simple and convenient format, appropriate for all levels of expertise

illustra RNAspin Midi Kit for applications requiring high yields

- Total RNA isolation with high-capacity columns
- DNase I included for greater cost savings and for maximum yield of high-quality RNA
- Prefilters included to reduce lysate viscosity
- Scalable input and output

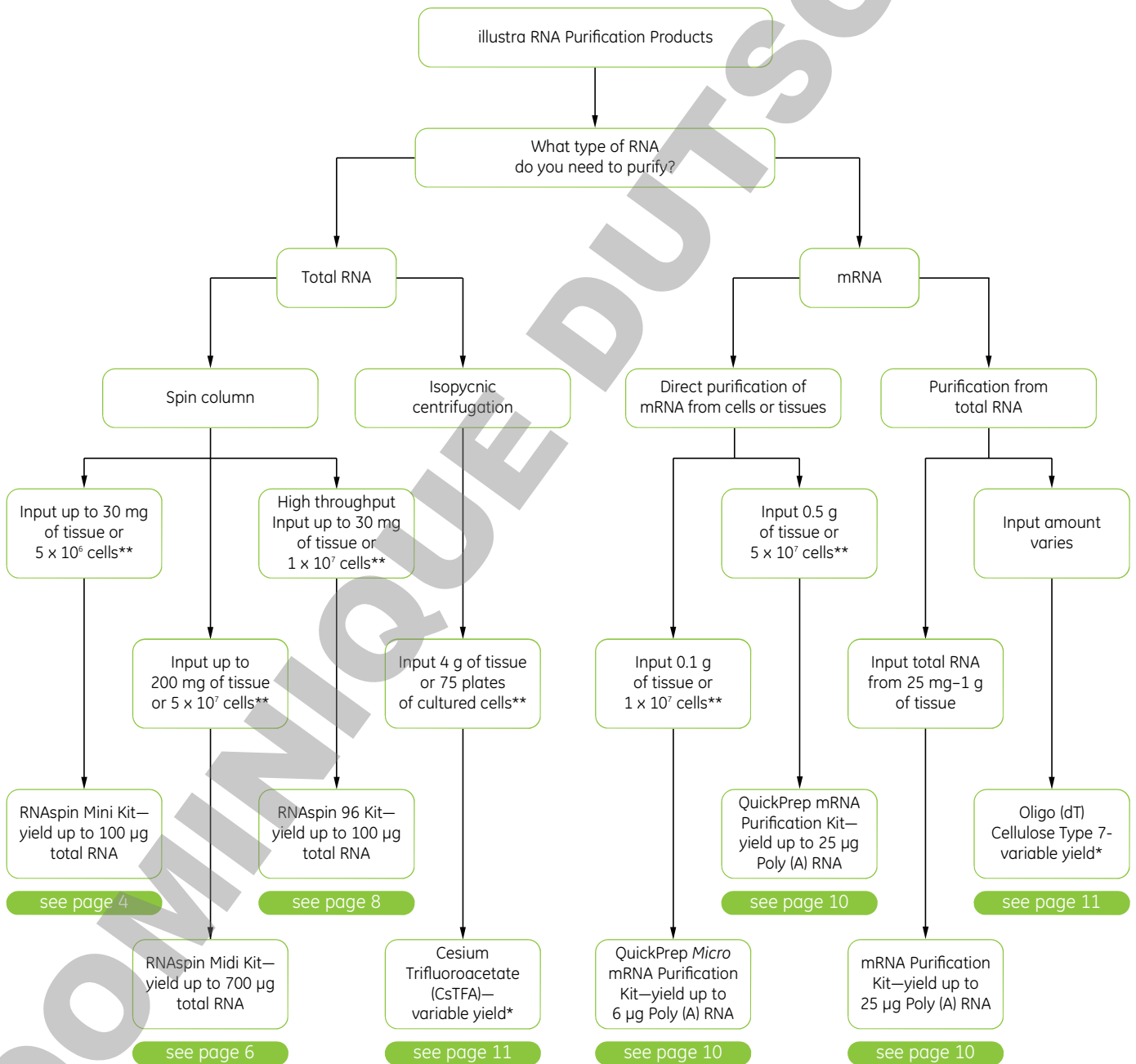
illustra RNAspin 96 Kit for high-throughput sample preparation

- Total RNA isolation designed for reproducible and consistent purification for high-throughput
- DNase I included for greater cost savings and for maximum yield of high-quality RNA
- Prefilters included to reduce lysate viscosity sample preparation
- Fast and efficient purification in 96-well format

illustra mRNA isolation kits

- Utilize the speed and selectivity of Oligo (dT)-Cellulose spin column chromatography
- Enable high-quality mRNA purification in yields suitable for direct use in cDNA synthesis and subsequent PCR, Northern blot hybridization and *in vitro* translation
- Extract mRNA directly from cells and tissue or from total RNA

Selection guide for RNA purification kits



*Yield dependent on input source and amount

**Values indicative for eukaryotic cells

illustra RNAspin Mini RNA Isolation Kit

Total RNA isolation from diverse sample types for sensitive downstream applications

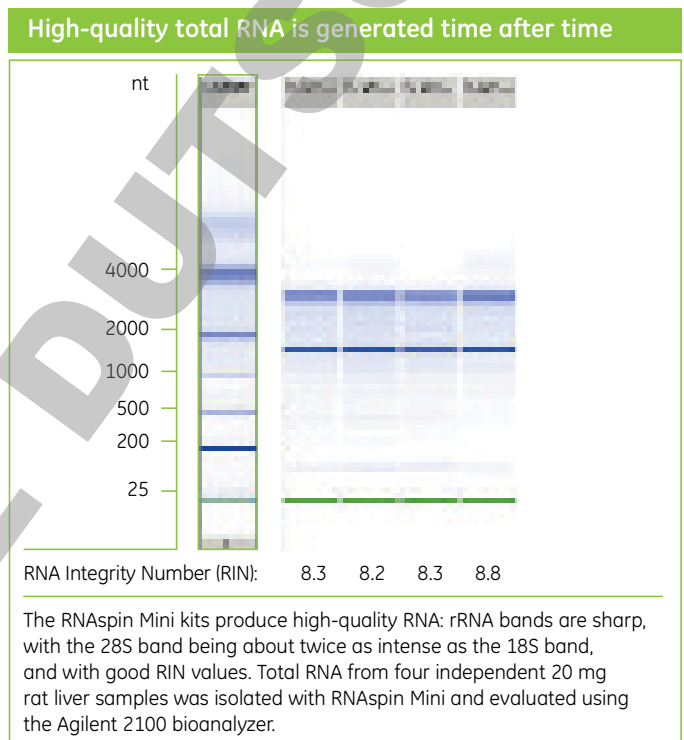
RNA purification is often the first step of your experimental workflow, which is why the main focus of the illustra RNAspin Mini kit is the quality of the output RNA. Each step of our protocol has been finely tuned to allow you to obtain the best possible yields and purities. At the same time, a high level of convenience and simplicity in the format has been maintained.

By identifying key elements that affect the quality of preparation we provide a robust kit that can accommodate a diverse range of sample types, resulting in the extraction of RNA suitable for use in applications such as microarray analysis and quantitative or endpoint RT-PCR.

Our on-column DNase I digest improves purities by addressing issues of gDNA contamination. Yields maximized by the inclusion of prefilters and a unique lysis buffer that is less susceptible to foaming.

DNase I included to remove genomic DNA, provides high-quality RNA

- DNase I is included for convenient on-column gDNA removal, leading to pure total RNA
- Typical RNA integrity numbers (RIN) > 8.0



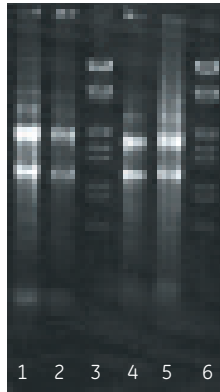
Prefilters included to reduce lysate viscosity

- Especially important for hard-to-lyse cells, tissue, bacteria, or yeast
- Improved yields and purity with no added cost
- Avoids RNA loss in the cellular debris
- Preventing the binding columns from clogging ensures rapid flow rate, minimizing preparation time

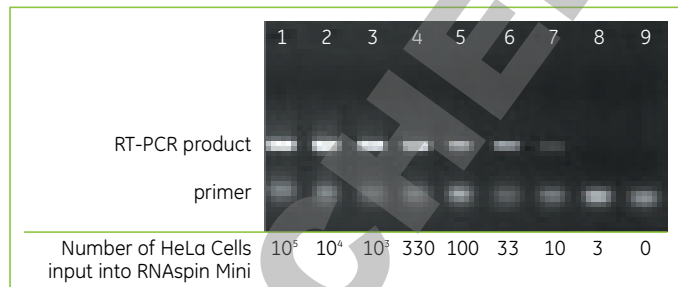
Isolate total RNA from hard-to-lyse bacterial strains

RNAspin Mini Kits are effective at isolating RNA from hard-to-lyse bacterial strains. Total RNA was purified from *Pseudomonas putida* (1,2) and *Paenibacillus polymyxa* (4,5), (3,6 = RNA ladder). An aliquot was analyzed on a 1.2% formaldehyde gel.

Courtesy of S. Meier-Bethke, Federal Biological Research Center for Agriculture and Forestry, Institute for Plant Virology, Microbiology and Biosafety, Braunschweig, Germany.



Isolated RNA, even from very small input amounts, performs well in downstream applications



RT-PCR of total RNA isolated with the RNAspin Mini standard protocol from 10^5 , 10^4 , 10^3 , 330, 100, 33, 10, 3, and 0 HeLa cells. The RT-PCR was done with 3 μ l of total RNA each (elution volume 40 μ l). The specific RT-PCR product, generated from β -actin primers, is 626 bp in length.

Results can be obtained even from small amounts of precious sample

- Extract total RNA from a small number of cells (e.g. ≥ 10 HeLa cells for RT-PCR)
- Effective column-binding capacity of 100 μ g

Simple and convenient format that is suitable for all levels of expertise

- Colored column rings allow for easy identification during the protocol
- Elution volumes as low as 40 μ l eliminate the need to concentrate sample
- Well-established, silica-membrane technology

Ordering information

RNAspin Mini

Product Description	Qty/Size	Code No.
RNAspin Mini	20 preps	25-0500-70
RNAspin Mini	50 preps	25-0500-71
RNAspin Mini	250 preps	25-0500-72



illustra RNAspin Midi RNA Isolation Kit

Total RNA isolation for applications requiring high yields

For many years, Northern blot hybridization has continued to be a mainstay of RNA-based analysis, even with the advent of microarrays and qRT-PCR analyses.

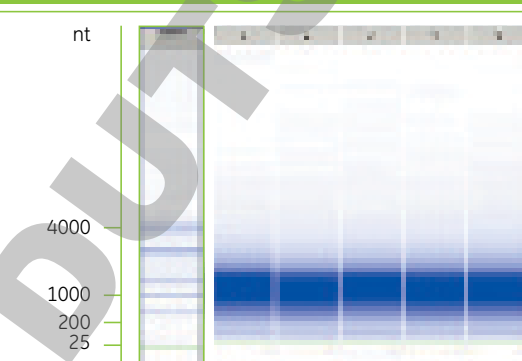
GE Healthcare has taken a lead in developing this application with matched systems combining radioactive nucleotides and sensitive blotting membranes such as Hybond™ N+.

High yields of nondegraded quality RNA are a prerequisite for obtaining successful results with this technique. With the illustra RNAspin Midi kits, the cell lysis buffer immediately inactivates RNases and creates appropriate binding conditions that favor adsorption of RNA to the silica membrane.

High-capacity columns for maximum yield return of high-quality RNA

- Yields up to 700 µg total RNA from 200 mg mouse liver treated to remove contaminating gDNA
- Reproducible yields of high-quality RNA

Total RNA performs robustly in microarray workflow applications



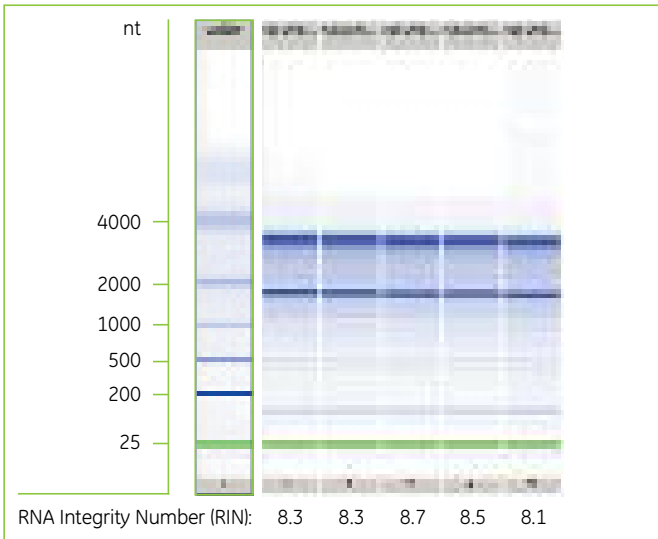
Labeled cRNA yield from 1 µg total RNA:	114.3 µg	103.1 µg	107.4 µg	112.1 µg	138.1 µg
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RNAspin Midi Kits yield total RNA that acts as a robust source material for generating labeled cRNA for microarray analysis. 1 µg of five separate total RNAs, isolated from five independent rat liver samples was used to generate biotin-labeled cRNA. The resulting cRNA was analyzed on the Agilent 2100 bioanalyzer, which shows the reproducible purity and quality of the labeled cRNA.

Scalable input and output

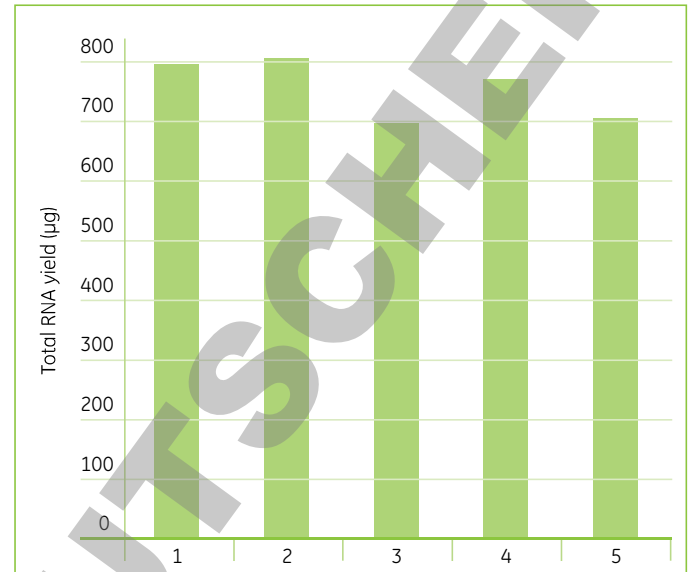
- Identical chemistry to RNAspin Mini Kit enables experiments to be scaled up
- User-defined elution volume eliminates the need for further processing before the next step in your experiment
- Total RNA extracted from large amounts of sample, such as 5×10^7 cells or up to 200 mg tissue

High-quality total RNA production is routine



The RNAspin Midi kits produce high-quality RNA: rRNA bands are sharp, with the 28S band being about twice as intense as the 18S band, and with good RIN values. Total RNA from five independent 100 mg rat liver samples was isolated with RNAspin Midi and evaluated using the Agilent 2100 bioanalyzer.

Reproducible yields of high-quality total RNA



RNAspin Midi kits produce robust yields of high-quality RNA. Total RNA from five independent 100 mg rat liver samples was isolated with RNAspin Midi and quantitated using the spectrophotometric A_{260} values.

Prefilters included to reduce lysate viscosity

- Especially important for hard-to-lyse cells, tissue, bacteria, or yeast samples
- Improved yield and purity with no added cost
- Avoids RNA loss in the cellular debris
- Preventing the binding columns from clogging ensures rapid flow rate, minimizing preparation time

DNase I treatment to remove genomic DNA provides high-quality RNA

- DNase I is included for convenient gDNA removal, leading to pure total RNA
- Typical RIN > 8.0

Ordering information

RNAspin Midi

Product Description	Qty/Size	Code No.
RNAspin Midi	20 preps	25-0500-73



illustra RNAspin 96 RNA Isolation Kit

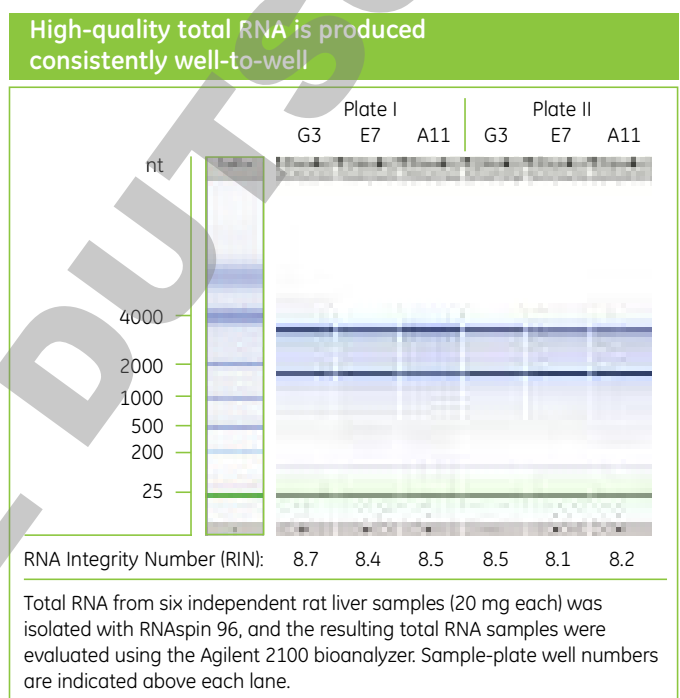
Reproducible total RNA isolation in a high-throughput format

As the pressure to publish forces you to look for faster ways to obtain more data, the answer is often to process an increased number of samples in parallel. With protocol run times that have been optimized to be as short as possible, illustra RNAspin 96 kits deliver the high throughput you need.

The diverse nature of high-throughput kits enhances the flexibility of the system. We can accommodate your requirements whether you process samples under vacuum, using centrifugation, manually, or with automation. The inclusion of a prefilter accessory plate further enhances the flexibility of the kits by providing you with genuine scalability. With this plate, easy processing of tissue samples becomes a reality.

Fast and efficient purification in a 96-well format

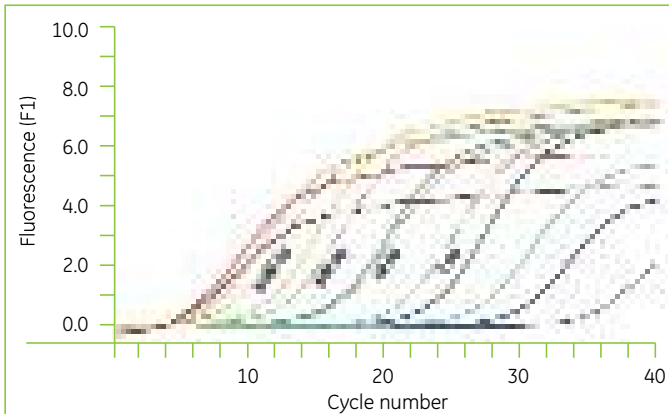
- Parallel processing of 96 samples with high reproducibility in less than 70 min
- Color-coded column rings allow for easy identification during the protocol
- Simple, on-column lysis for small amounts of sample improves efficiency by avoiding mechanical homogenization



Designed with automation in mind

- Integrated wash plate eliminates risk of cross contamination
- Flexible processing by vacuum or centrifugation
- Compatibility with common liquid handling instruments enables fast integration
- Minimized dead volume of binding plate reduces volume loss

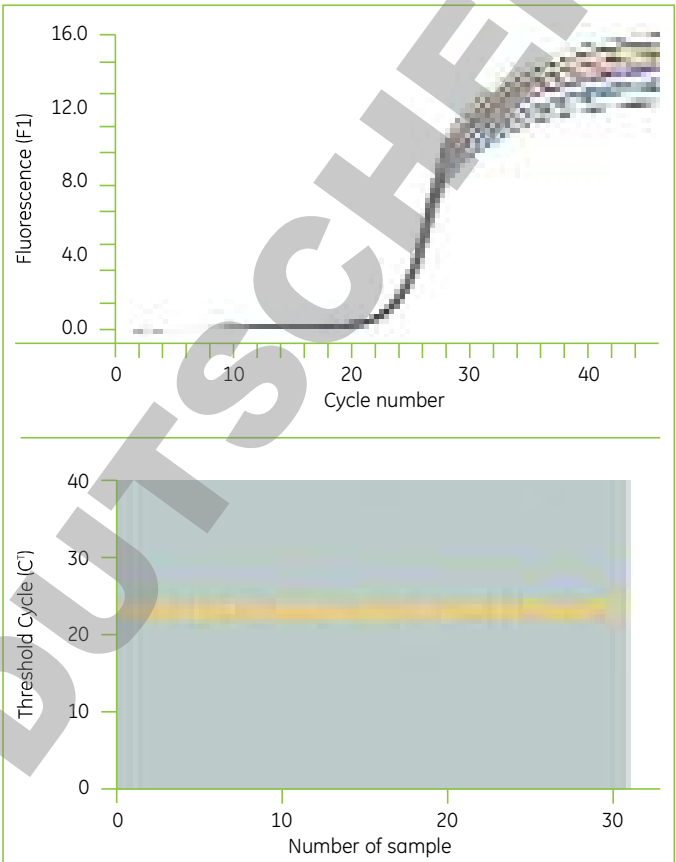
Small input amounts also yield high-quality total RNA



Total RNA from the indicated numbers of HeLa cells has been purified on the MultiProbe™ II HT according to standard protocols and detected by RT-PCR (2 µl of the 100 µl eluate, primers specific for GAPDH). This shows that RNA could be isolated and amplified even from a small amount of cells.

(■) 2×10^8 cells, (■) 1×10^8 cells, (■) 1×10^5 cells, (■) 1×10^4 cells, (■) 1000 cells, (■) 100 cells, (■) 10 cells, (■) 1 cell, (■) water
Standards: gDNA (amount as indicated)

Robust performance in downstream applications



Total RNA from 10 mg of liver tissue each was prepared using RNAspin 96 on a Biomek™ FX (Beckman Coulter). 1 µl out of the 80 µl eluate was used for LightCycler™ detection (GAPDH primer, SYBR™ Green). Threshold cycles (CT) are shown for all samples. The mean threshold value was 22.04 ± 0.21 with a CV of 0.95%.

DNase I treatment to remove genomic DNA provides high-quality RNA

- DNase I included for convenient on-column gDNA removal, leading to pure total RNA
- Typical RIN > 8.0

Ordering information

RNAspin 96

Product Description	Qty/Size	Code No.
RNAspin 96	2 x 96-well plates	25-0500-74
RNAspin 96	4 x 96-well plates	25-0500-75
RNAspin 96	24 x 96-well plates	25-0500-76
RNAspin 96 Filter Plate (accessory product for tissue samples)	4 x 96-well plates	25-0500-88



illustra mRNA Purification Kits

Simple and rapid purification from total RNA or directly from cells and tissues

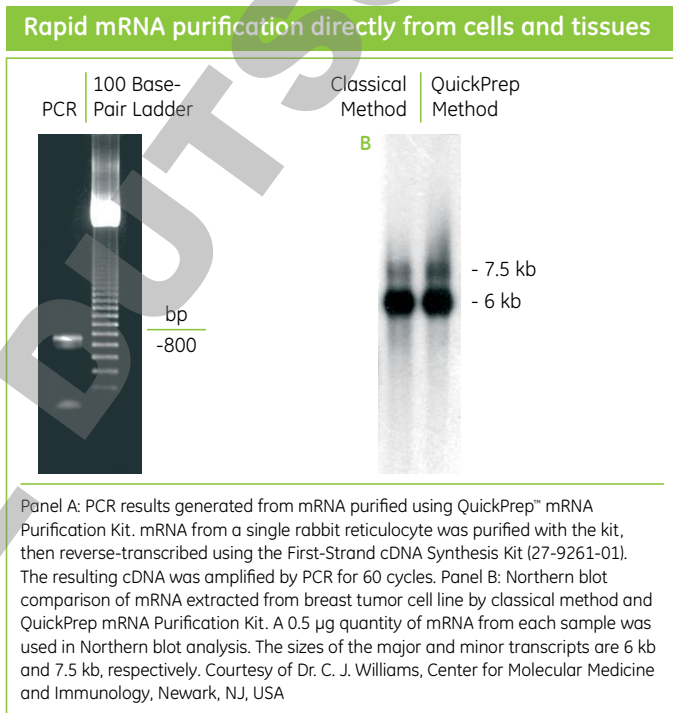
Messenger RNA isolation kits are designed for simple and rapid purification from total RNA or directly from cells and tissues.

Traditionally, mRNA has been separated on Oligo (dT)-Cellulose affinity columns and this still remains the method of choice. Recent improvements have included format changes to improve speed of purification and enhance flexibility, allowing purification directly from cells and tissues.

mRNA Purification Kit contents		
Pack Size:	2 preps	4 preps
Cat. No.:	27-9258-01	27-9258-02
Oligo (dT)-Cellulose columns	4	8
High Salt Buffer	2 vials	4 vials
Sample Buffer	2 vials	4 vials
Low Salt Buffer	2 vials	4 vials
Elution Buffer	2 vials	4 vials
Glycogen Solution	1 vial	1 vial
Protocol	1	1

QuickPrep Micro mRNA Purification Kit/ QuickPrep mRNA Purification Kit

- Rapid purification of mRNA directly from a wide variety of eukaryotic cells, tissue samples, or even a single cell
- Fast and easy to use with no need for intermediate isolation of total RNA
- Preserves the integrity of mRNA by utilizing guanidine thiocyanate during crucial early stages of purification
- Utilizes speed and selectivity of Oligo (dT)-Cellulose spin column chromatography
- Purifies high-quality mRNA in yields suitable for direct use in cDNA synthesis and subsequent PCR, Northern blot hybridization, and *in vitro* translation



mRNA Purification Kit

- Rapid affinity purification of mRNA from eukaryotic total RNA using prepacked Oligo (dT)-Cellulose spin columns
- Purifies mRNA in 30–45 min from total RNA extracted from as little as 25 mg or as much as 1 g of cells or tissue
- Features predisposed reagents for each purification to minimize the risk of nuclease contamination
- Produces mRNA ready for direct use (without precipitation) in procedures such as cDNA synthesis, PCR, Northern blot hybridization, and *in vitro* translation

Technical specifications

Feature	QuickPrep <i>Micro</i> mRNA Purification Kit	QuickPrep mRNA Purification Kit
Number of purifications	24	4
Upper limit on starting sample size	0.1 g of tissue or 1×10^7 cells	0.5 g of tissue or 5×10^7 cells
Elapsed time per purification	15 min	< 1 h
Centrifuge required	Microcentrifuge	Table-top centrifuge with swinging-bucket rotor
Oligo (dT)-Cellulose spin columns	Prepared by user from slurry and empty MicroSpin™ Columns provided	Provided as four prepacked Oligo (dT)-Cellulose spin columns
Extraction buffer, high-salt buffer, low-salt buffer, elution buffer	One bottle of each for all 24 purifications	Individually packaged (four vials each)
Glycogen solution, 2.5 M potassium acetate solution	One tube for all 24 purifications	Individually packaged (two vials each)
Sample buffer	None	Individually packaged (two vials each)
Instruction booklet	Complete protocols	Complete protocols

Oligo (dT)-Cellulose Type 7

- Simple affinity purification of polyadenylated [poly(A)] mRNA
- High binding capacity and chemical stability
- Supplied as dried powder, each gram having a packed volume of ~ 2.5–3.5 ml when suspended in water; binds 80–100 A_{260} units of poly(A) in 10 mM Tris (pH 7.5) and 500 mM KCl

Cesium Trifluoroacetate (CsTFA)

- Similar in use to cesium chloride (CsCl) for tailor-made purification of nucleic acids
- Produces higher quality nucleic-acid preparations in comparison to traditional cesium density gradient media
- Isopycally bands all types of RNA
- Solubilizes and denatures proteins, resulting in their removal from nucleic acids
- Inhibits nuclease activity, resulting in nondegraded DNA and RNA

Ordering information

QuickPrep

Product Description	Qty/Size	Code No.
QuickPrep <i>Micro</i> mRNA Purification Kit	24 preps	27-9255-01
QuickPrep mRNA Purification Kit	4 preps	27-9254-01

mRNA Purification Kits

Product Description	Qty/Size	Code No.
mRNA Purification Kit	4 preps	27-9258-01
mRNA Purification Kit	8 preps	27-9258-02

Oligo (dT)-Cellulose Type 7

Product Description	Qty/Size	Code No.
Oligo (dT)-Cellulose Type 7	1 g	27-5543-02
Oligo (dT)-Cellulose Type 7	5 g	27-5543-03

Cesium Trifluoroacetate

Product Description	Qty/Size	Code No.
Cesium Trifluoroacetate	100 ml solution	17-0847-02



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