

RNA Purification Products from MACHEREY-NAGEL



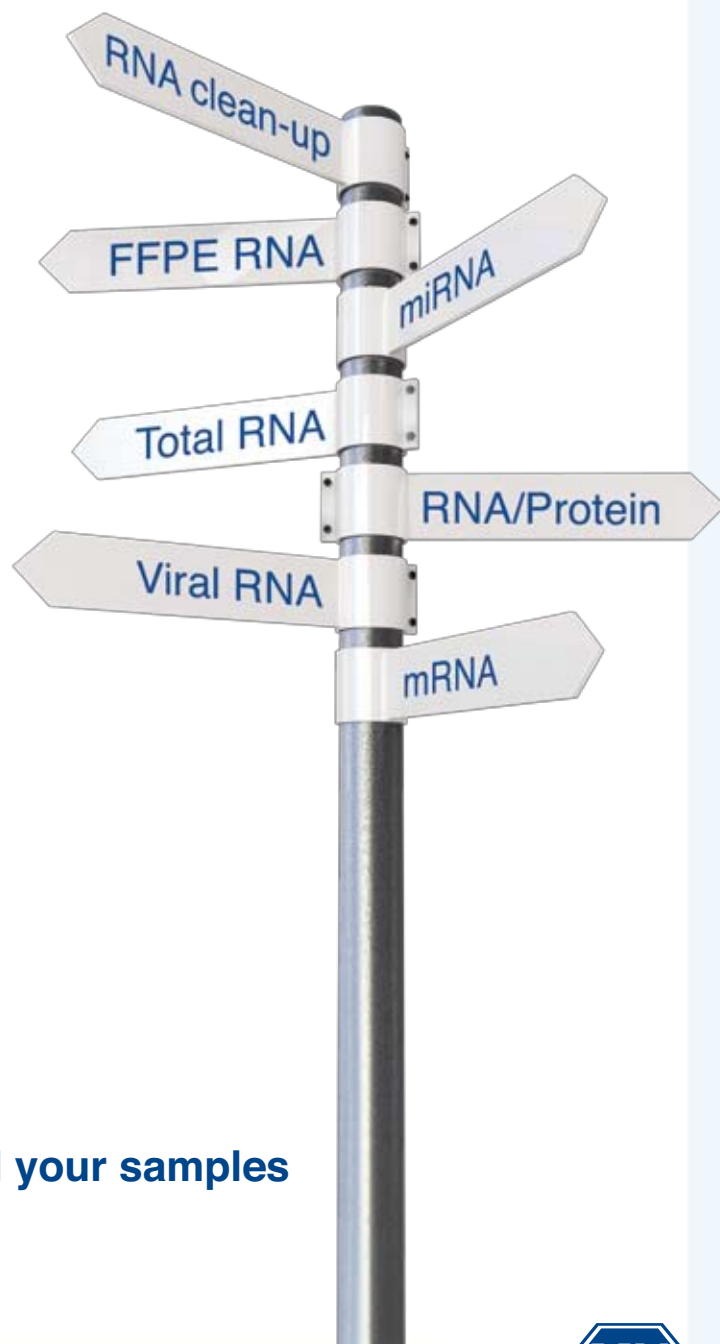
MN Guide to RNA Purification

Improved ways to get your RNA

NucleoSpin®

NucleoTrap®

NucleoMag



Outstanding RNA quality

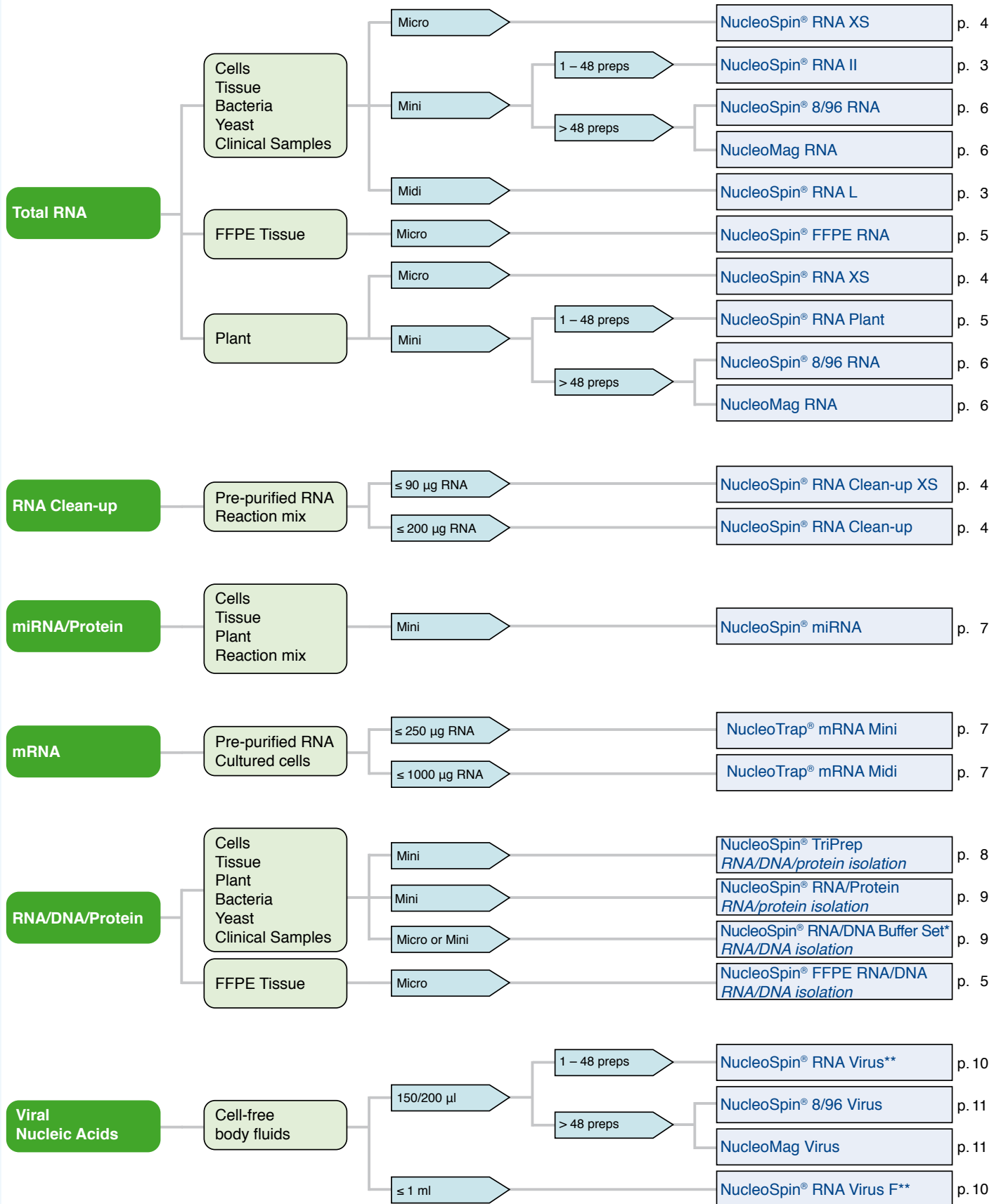
Convenient handling

Time-saving procedures

Superior selectivity

... get RNA easily out of all your samples

MACHEREY-NAGEL RNA Kit Finder



* To be used in conjunction with NucleoSpin® RNA kits (see page 9)

** Additional Proteinase K needed for DNA isolation (see page 10)

Trademarks

MACHEREY-NAGEL: NucleoSpin®, NucleoTrap®

Other companies: Coomassie® [ICI Organics Inc.], KingFisher® [Thermo Electron Corp. (USA)], LightCycler® [Roche], PCR is patented by Hoffmann La Roche

NucleoSpin® RNA II

RNA mini spin kit for cells, tissue, yeast, and bacteria

High integrity
High purity
High yield

rDNase and filters included



► Isolate RNA of highest integrity

Get high RIN (RNA Integrity Number, RIN > 9 from fresh HeLa cells)
Effective inhibition of RNases

► No DNA contamination

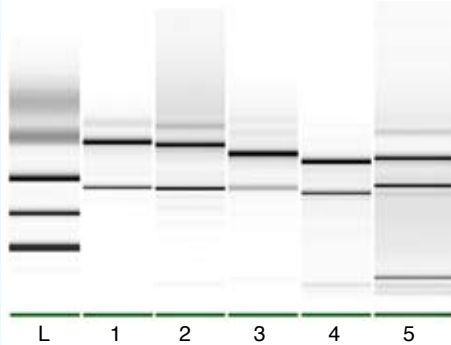
Convenient on-column DNA removal
High quality DNase (recombinant) included

► Obtain high RNA yield

Very efficient lysis
Excellent RNA recovery
NucleoSpin® Filters (shredders) included – minimized lysate viscosity – no membrane clogging

► Fast and convenient RNA isolation procedure

No phenol/chloroform extractions
Less than 30 minutes hands-on time



Total RNA of high integrity from a huge variety of starting materials

The RNA Integrity Number (RIN) was determined from RNA of mammalian samples.
RIN from HeLa cell was 9.5 and from mouse liver 8.9.

Lane*	Sample Material
1	HeLa cells (10 ⁶)
2	Mouse liver (3 mg)
3	Zebrafish (1 larva)
4	Yeast cells (10 ⁸)
5	Bacteria (10 ⁹)

Elution volume: 50 µl. RNA analyzed on Agilent 2100 Bioanalyzer/RNA 6000 Nano Kit.
Lane L: RNA Ladder (RNA 6000 Nano Marker; Agilent)

Ordering information

Product

NucleoSpin® RNA II

Preps

10/50/250

REF

740955.10/.50/.250



* The figure is compiled from different gels and runs, aligned to the corresponding length markers.

NucleoSpin® RNA L

RNA midi spin kit for cells, tissue, yeast, and bacteria

► High RNA yields of up to 600 µg RNA

Suitable for medium large amounts of tissue (up to 200 mg), cultured cells (up to 5 x 10⁷),
bacteria (up to 10¹⁰ cells), and yeast (up to 3 x 10⁸ cells)
NucleoSpin® Filters (shredders) included – minimized lysate viscosity – no membrane clogging

► RNA of highest integrity

Get high RIN (RNA Integrity Number, RIN > 9 from fresh HeLa cells)
Effective inhibition of RNases

► No DNA contamination

Convenient on-column DNA removal
High quality DNase (recombinant) included

Ordering information

Product

NucleoSpin® RNA L

Preps

20

REF

740962.20



NucleoSpin® RNA XS

Purification of highly concentrated RNA even from very small samples

Concentrated RNA for best performance in downstream applications
Even from smallest samples

► **Get higher sensitivity for your downstream application**

Optimized column design
Elution in as little as 5 µl possible
Highly concentrated RNA for best performance in downstream applications

► **Successful RNA isolation even from very small sample material**

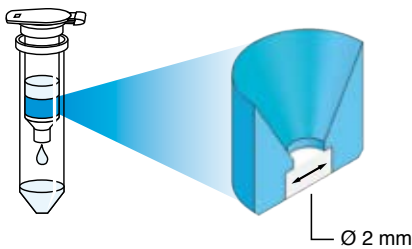
Ideal for very small samples like e.g., biopsies, LCM samples, FACS sorted cells, single cells, fine needle aspirates

► **Get excellent RNA recovery**

No compromise of RNA yield – even with an elution volume down to 5 µl

► **High quality RNA, ready-to-use for RT-PCR and other applications**

Optimized procedure for highest RNA quality
Convenient and efficient on-column DNA removal
Typical RIN > 9 for fresh HeLa cells



XS column design – Increased sensitivity

NucleoSpin® RNA XS Columns are designed for increased sensitivity. A silica membrane of small diameter is embedded in a funnel-shaped ring (see column cross-section), allowing an elution volume of only 5 – 30 µl. Thus, also limited amounts of RNA can be eluted in higher concentrations – for higher sensitivity in downstream applications.

Ordering information

Product

NucleoSpin® RNA XS

Preps

10/50/250

REF

740902.10/.50/.250



NucleoSpin® RNA Clean-up XS

Rapid clean-up and concentration of RNA from reaction mixtures or pre-purified RNA

Up to 55 fold concentration of RNA
Complete removal of impurities

► **Very high RNA concentration and recovery**

Concentrate your RNA up to 55 fold (input volume 300 µl – elution volume 5 µl)
Typical recovery > 95%

► **High capacity**

Suitable for 300 µl RNA solution
Binding capacity of the column: 90 µg RNA

► **Excellent RNA purity**

Complete removal of RT-PCR inhibitors
Purify and concentrate RNA from reaction mixtures (e.g., amplification reactions, labeling reactions, DNase digestions)
Remove even traces of organic solvents from pre-purified RNA

Ordering information

Product

NucleoSpin® RNA Clean-up XS

Preps

10/50/250

REF

740903.10/.50/.250

Also available:

NucleoSpin® RNA Clean-up

10/50/250

750948.10/.50/.250



NucleoSpin® FFPE RNA NucleoSpin® FFPE RNA/DNA

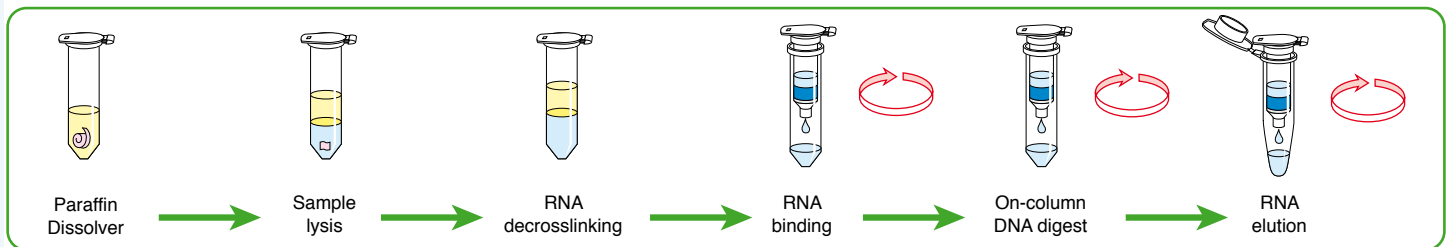
Purification of nucleic acids from FFPE samples

Get hard-to-extract RNA
from FFPE samples easily

No xylene needed

- ▶ **Make your paraffin removal convenient – No xylene needed**
Simply melt paraffin with the Paraffin Dissolver (patent pending) provided with the kit
Without toxic organic solvent – without time-consuming mixing steps – without long incubation times
- ▶ **Enhance your RT-PCR performance – Well decrosslinked RNA**
Improved template quality – get less fragmented, well decrosslinked, DNA-free RNA
Improved sensitivity – highly concentrated RNA by elution in only 5 – 30 µl
Excellent recovery due to XS column design (minimal elution volume)
- ▶ **Save your time**
Minimum number of working steps – fast procedure preserves RNA quality
- ▶ **Special kit for RNA and DNA from the same sample**
Save precious sample material with NucleoSpin® FFPE RNA/DNA
Get RNA and DNA from unsplit samples in two different fractions – direct correlation possible
- ▶ **Suitable for a large variety of starting materials, like clinical samples**
Colon carcinoma (hematoxylin stained/unstained), colon mucosa, adenocarcinoma of colon transversum, liver (rat/human), liver carcinoma (hematoxylin stained), lymph node, spleen (rat/human), placenta...

Procedure: Convenient paraffin removal – Minimum number of working steps



Ordering information

Product	Preps	REF
NucleoSpin® FFPE RNA	10/50/250	740969.10/.50/.250
NucleoSpin® FFPE RNA/DNA	10/50/250	740978.10/.50/.250



NucleoSpin® RNA Plant

Plant RNA mini spin kit – For all kinds of plant material

Select the most efficient
lysis buffers

Optimized for a huge
variety of plants

- ▶ **Optimized lysis procedure**
Two alternative lysis buffers included – choose your buffer for best efficiency
NucleoSpin® Filters (shredders) included for efficient homogenization
- ▶ **Get high RNA yield and high purity**
Up to 70 µg ready-to-use RNA from 100 mg plant material
RNA of high integrity and outstanding purity (A_{260}/A_{280} : 1.9 – 2.1)
- ▶ **Suitable for a huge variety of plants**
Successful isolation of RNA from leaves, roots, seed, stem and many other plant material

Ordering information

Product	Preps	REF
NucleoSpin® RNA Plant	10/50/250	740949.10/.50/.250



NucleoSpin® 8/96 RNA NucleoSpin® 8/96 RNA Core Kit

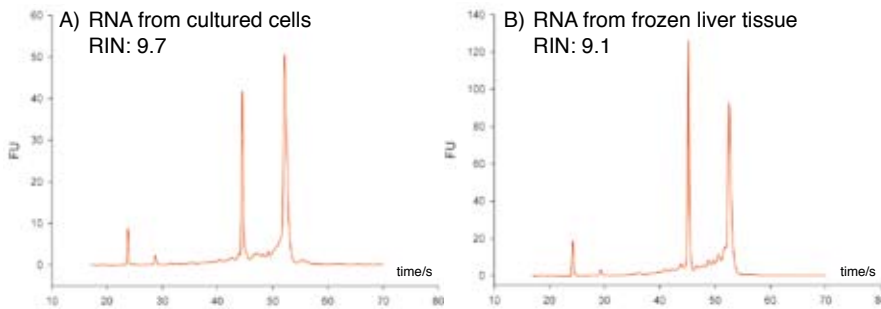
High and medium throughput kits for total RNA isolation

Automation friendly

Scripts for many
platforms available



- ▶ **Flexible solutions – From medium to high throughput**
8-well strips and 96-well plates available for highest flexibility
Suitable for manual and automated processing
Processing possible under vacuum or by centrifugation
- ▶ **Minimized risk of cross-contamination**
Use of MN Wash Plate technology
- ▶ **Highest purity**
Recombinant DNase included for efficient on-column removal of DNA
RNA ready-to-use for all common downstream applications
- ▶ **Core kit versions available**
Price-attractive – kits with basic contents*



Total RNA of high integrity

Electropherograms obtained from Agilent Bioanalyzer 2100 using RNA Nano 6000 reagents. RNA was isolated from cells (A) or frozen liver tissue (B). RNA integrity numbers (RIN) are 9.7 for RNA isolated from cells and 9.1 for RNA isolated from frozen liver tissue.

Ordering information

Product	Preps	REF
NucleoSpin® 8 RNA	12 x 8/60 x 8	740698/740698.5
NucleoSpin® 8 RNA Core Kit*	48 x 8	740465.4
NucleoSpin® 96 RNA	2 x 96/4 x 96/24 x 96	740709.2/.4/.24
NucleoSpin® 96 RNA Core Kit*	4 x 96	740466.4

* Core kit contents are focused on automation platforms. Additional accessories can be combined as needed. Please check www.mn-net.com or contact our Technical Support.



NucleoMag 96 RNA

Magnetic-bead based isolation of total RNA from tissue and cell samples

- ▶ **Highly suitable for automated processing**
Easy resuspension, mixing, and efficient bead separation
Minimized bead carry-over
Typically 120 min preparation time for 96 samples on common automation platforms
- ▶ **Minimized risk of cross-contamination**
One-tube procedure
- ▶ **Highest purity and convenience**
Recombinant DNase included for efficient removal of genomic DNA
Odourless reducing agent TCEP included (no β -mercaptoethanol necessary)
Complete procedure is carried out at room temperature
- ▶ **Highly concentrated RNA**
Small elution volumes down to 50 μ l possible

Ordering information

Product	Preps	REF
NucleoMag 96 RNA	1 x 96/4 x 96	744350.1/.4

NucleoSpin® miRNA

Parallel isolation of small RNA, large RNA, and protein

Additional isolation
of total protein

No phenol/chloroform
needed



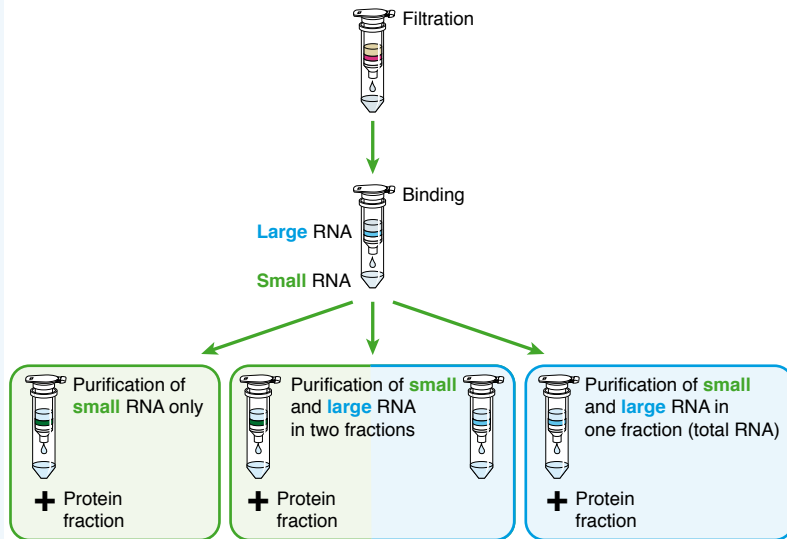
▶ **Superior selectivity – RNA fractionated by size – Highest flexibility**

Isolation of small RNA only (18 – 200 bases) *or*
Isolation of small (18 – 200 bases) and large (> 200 bases) RNA in two fractions *or*
Isolation of total RNA (small and large RNA in one fraction)

▶ **Additional isolation of total protein – Confirm RNA results on protein level**

Proteins, ready-to-use for analysis in SDS-PAGE and Western blot, can be isolated in parallel

▶ **Excellent RNA recovery – Even without phenol/chloroform – Less hazardous**



Very convenient RNA fractionation

A special developed buffer chemistry allows selectivity between small and large RNA. The additional isolation of total protein gives the possibility to confirm RNA results on protein level.

Ordering information

Product

NucleoSpin® miRNA

Preps*

10/50/250

REF

740971.10/.50/.250

*Numbers of preps for the isolation of small and large RNA in one fraction



NucleoTrap® mRNA

Kit for the enrichment and isolation of poly(A) messenger RNA (mRNA) from total RNA

▶ **High quality poly(A) mRNA**

Without degradation
Without DNA contamination
Ready-to-use in all common downstream applications

▶ **Convenient and fast processing**

NucleoTrap® Microfilters included for microcentrifugation
mRNA enrichment in only 30 min

▶ **Available in miniprep and midiprep format**

NucleoTrap® mRNA Mini: for up to 250 µg total RNA as starting material
NucleoTrap® mRNA Midi: for up to 1,000 µg total RNA as starting material

Ordering information

Product

NucleoTrap® mRNA Mini

Preps

12

REF

740655

NucleoTrap® mRNA Midi

12

740656



NucleoSpin® TriPrep

Simultaneous isolation of RNA, DNA, and protein from unsplit samples

Direct correlation of RNA,
DNA, and protein

For most significant gene
expression profiling



▶ One Prep – Three results

Total RNA of superior quality – for all common downstream applications
Genomic DNA of high purity – ready-to-use for e.g., PCR, sequencing, and restriction enzyme digestion
Total protein in high recovery – directly suitable for quantification, SDS-PAGE, and Western blot analysis

▶ Rely on your experiments

RNA/DNA/protein extracted from one unsplit sample
Direct correlation – direct comparison – no deviations

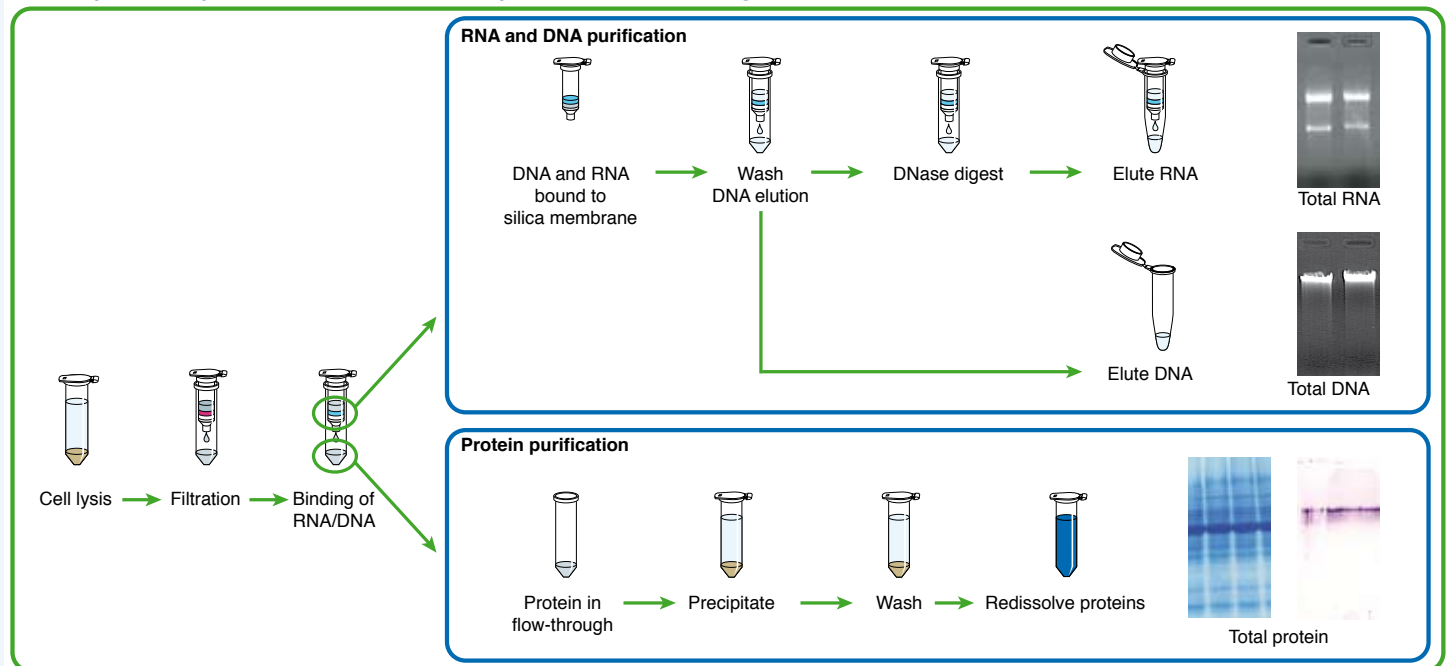
▶ Save precious sample material

Maximum output – isolate three analytes from one sample
High sensitivity – ideal for small and limited samples and precious material

▶ Save your time

Parallel isolation of RNA, DNA, and protein within one hour

NucleoSpin® TriPrep Procedure: RNA, DNA, and protein isolation in one go



Ordering information

Product

NucleoSpin® TriPrep

Preps

10/50/250

REF

740966.10/.50/.250

Distribution and use of NucleoSpin® TriPrep in the USA is prohibited for patent reasons.



Protein Quantification Assay

The perfect supplement for NucleoSpin® TriPrep, NucleoSpin® RNA/Protein, and NucleoSpin® miRNA

▶ Protein quantification made easy

Easily quantify total protein in samples containing SDS, reducing agent, and bromphenol blue dye

▶ Fast & easy-to-use

Quantification results in only 40 minutes

▶ Accurate & Reliable

For determining protein concentrations down to 0.001 µg/µl

Ordering information

Product

Protein Quantification Assay

Preps

50/250

REF

740967.50/.250



NucleoSpin® RNA/Protein

Simultaneous isolation of RNA and proteins from unsplit samples

Gene expression profiling
in one go!

Direct correlation of
RNA and protein data



► Rely on your experiments

RNA and protein extracted from one unsplit sample – direct correlation – no deviations

► Isolate RNA of highest integrity

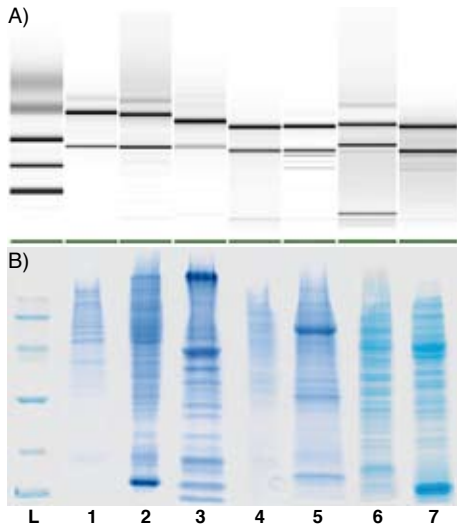
Get high RIN (RNA Integrity Number, RIN > 9 from fresh HeLa cells)
Effective inhibition of RNases

► Avoid DNA contamination

Convenient on-column DNA removal
High quality DNase (recombinant) included

► Total protein in high recovery

Independent of protein size, cell localization, or post-translational modifications (PTM)
Directly suitable for SDS-PAGE and Western blot analysis
Protein quantification possible by using the Protein Quantification Assay (see page 8)



Parallel isolation of RNA and protein from the same source

The range of starting materials covers tissues, cells, plant materials, yeast, and bacteria. Total RNA is of high structural integrity. The RNA integrity number (RIN) was measured for all mammalian samples. RIN was 9.5 for HeLa cell RNA and 8.9 for mouse liver RNA.

Extracted proteins were solved in Protein Solving Buffer. The proteins are ready to use in SDS-PAGE analysis, as well as for Western blotting.

A)* RNA was eluted in 50 µl and analyzed on an Agilent 2100 Bioanalyzer/RNA 6000 Nano Kit. Lane L: RNA Ladder (RNA 6000 Nano Marker; Agilent), Lanes 1 – 7: see table below.

B)* Total protein analyzed on SDS-PAGE.

Lane L: Protein ladder (low molecular weight marker; GE Healthcare), Lanes 1 – 7: see table below.

Lane	Sample material
1	HeLa cells (10 ⁶)
2	Mouse liver (3 mg)
3	Zebrafish (1 larva)
4	Plant root (100 mg)
5	Plant leave (100 mg)
6	Yeast cells (10 ⁸)
7	Bacteria (10 ⁹)

Ordering information

Product

NucleoSpin® RNA/Protein

Preps

10/50/250

REF

740933.10/.50/.250



* Figures are compiled from different gels and runs, aligned to the corresponding length markers.

NucleoSpin® RNA/DNA Buffer Set

Buffer set for parallel isolation of RNA and DNA from one unsplit sample

The NucleoSpin® RNA/DNA Buffer Set can be used in conjunction with NucleoSpin® kits for total RNA isolation: NucleoSpin® RNA II, NucleoSpin® RNA XS, and NucleoSpin® RNA Plant.

► Total RNA of superior quality

For reliable RT-PCR and all common downstream applications

► Genomic DNA of high purity

Ready-to-use for e.g., PCR, sequencing, and restriction enzyme digestions

► Rely on your experiments

RNA and DNA from one unsplit sample – direct correlation – no deviations

Ordering information

Product

NucleoSpin® RNA/DNA Buffer Set

Preps

100 (Minipreps)

REF

740944

Distribution and use of NucleoSpin® RNA/DNA Buffer Set in the USA is prohibited for patent reasons.



NucleoSpin® RNA Virus

Reliable RNA isolation of viral RNA and DNA* from cell-free body fluids

Highly reliable purification of
viral RNA and DNA

Proven for many viruses

▶ **Reliable and consistent results**

Reproducible isolation of viral RNA and DNA* – free of impurities

▶ **Safe and well established procedure**

Proven for a large variety of viruses including HCV, HIV, HBV, H1N1, H5N1, EBV, Blue Tongue Virus, HPV, ...

▶ **Highest sensitivity in downstream applications**

Carrier RNA included for best recovery and sensitivity in downstream applications

▶ **For parallel isolation of RNA and DNA* viruses**

Reliability and sensitivity for the isolation of nucleic acids from RNA and DNA viruses
Typical recovery > 90%

▶ **Fast and convenient protocol**

Isolate viral nucleic acids within only 30 min.

*For the isolation of DNA viruses, additional Proteinase K is required (see ordering information).

Ordering information

Products	Quantity	REF
NucleoSpin® RNA Virus	10/50/250 preps	740956.10/.50/.250
Proteinase K	100 mg	740506



NucleoSpin® RNA Virus F

Highly sensitive isolation of RNA and DNA* from up to 1 ml
cell-free body fluids

Concentrated viral
RNA and DNA

From up to 1 ml body fluids

▶ **Suitable for large sample volumes**

Process up to 1 ml of cell-free biological fluids (e.g., serum, plasma)

▶ **Highest sensitivity in downstream applications**

High concentration of viral RNA and DNA* – elute in only 50 – 100 µl
Carrier RNA included for best recovery and sensitivity in downstream applications

▶ **Reliable and consistent results**

Reproducible isolation of viral RNA and DNA* – free of impurities

▶ **Safe and well established procedure**

Closed system – no cross-contamination
For HCV, HIV, HBV, H1N1, H5N1, EBV, Blue Tongue Virus, HPV, ...

▶ **For parallel isolation of RNA and DNA* viruses**

Reliability and sensitivity for the isolation of nucleic acids from RNA and DNA viruses
Typical recovery > 90%

*For the isolation of DNA viruses, additional Proteinase K is required (see ordering information).

Ordering information

Product	Quantity	REF
NucleoSpin® RNA Virus F	25 preps	740958
Proteinase K	100 mg	740506



NucleoSpin® 8/96 Virus NucleoSpin® 8/96 Virus Core Kit

Isolation of viral RNA/DNA from serum, plasma,
or cell-free biological fluids

Automation friendly

Scripts for many
platforms available



► Flexible solutions – From medium to high throughput

8-well strips and 96-well plates available for highest flexibility
Suitable for manual and automated processing
Processing possible under vacuum or by centrifugation

► Minimized risk of cross-contamination

Compatible with the innovative MN Wash Plate technology (see ordering information)

► Highest purity and sensitivity

Proteinase K and Carrier RNA included
RNA/DNA ready-to-use for PCR, RT-PCR, or any kind of enzymatic reaction

► Core kit versions available

Price-attractive – kits with basic contents*

Ordering information

Product	Preps	REF
NucleoSpin® 8 Virus	12 x 8/60 x 8	740643/.5
NucleoSpin® 8 Virus Core Kit*	48 x 8	740451.4
NucleoSpin® 96 Virus	2 x 96/4 x 96	740691.2/.4
NucleoSpin® 96 Virus Core Kit*	4 x 96	740452.4
MN Wash Plate	4/24 Plates	740479/.24



* Core kit contents are focused on automation platforms. Additional accessories can be combined as needed.
Please check www.mn-net.com or contact our Technical Support.

NucleoMag 96 Virus

Magnetic-bead based isolation of viral RNA/DNA from serum or plasma

► Highly suitable for automated processing

Easy resuspension, mixing, and efficient bead separation
Minimized bead carry-over
Typically 120 min preparation time for 96 samples on common automation platforms

► Minimized risk of cross-contamination

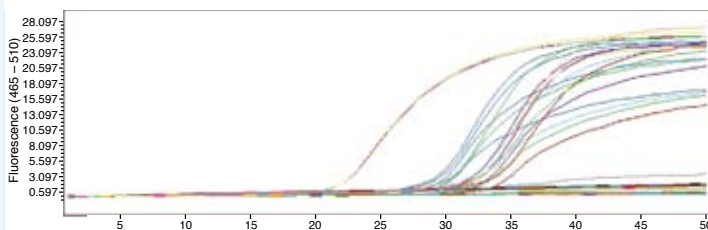
One-tube procedure

► Highest purity and sensitivity

Proteinase K and Carrier RNA included

► Highly concentrated RNA and DNA

Small elution volumes – 50 µl possible
Yield does not depend on elution volume



Data kindly provided by Dr. Tiemann, LABCON-OWL GmbH, Germany.

H1N1 RNA detection from swab samples

Isolated viral RNA from swab samples (using NucleoMag 96 Virus) was subjected to RT-PCR reactions specific for H1N1.

RT-PCR setup was performed according to the recommendations of the Robert-Koch Institute (RKI) on a Roche LightCycler® 480 instrument. All results are in compliance with the reference controls.

Ordering Information

Product	Preps	REF
NucleoMag 96 Virus	1x96/4x96	744800.1/.4.



Ordering information

Product*	Preps	REF
Single prep kits		
NucleoSpin® RNA II Total RNA isolation mini spin kit	10/50/250	740955.10/.50/.250
NucleoSpin® RNA L Total RNA isolation midi spin kit	20	740962.20
NucleoSpin® RNA XS Total RNA isolation mini spin kit, extra sensitive	10/50/250	740902.10/.50/.250
NucleoSpin® RNA Clean-up XS Total RNA clean-up and concentration mini spin kit, extra sensitive	10/50/250	740903.10/.50/.250
NucleoSpin® RNA Clean-up Total RNA clean-up mini spin kit	10/50/250	740948.10/.50/.250
NucleoSpin® FFPE RNA Total RNA isolation mini spin kit for FFPE samples	10/50/250	740969.10/.50 /.250
NucleoSpin® FFPE RNA/DNA** Total RNA and DNA isolation mini spin kit for FFPE samples	10/50/250	740978.10/.50/.250
NucleoSpin® RNA Plant Total RNA isolation mini spin kit for plant samples	10/50/250	740949.10/.50/.250
NucleoSpin® miRNA miRNA isolation mini spin kit	10/50/250	740971.10/.50/.250
NucleoTrap® mRNA Mini/Midi mRNA enrichment mini/midi kits	12	740655/ 740656
NucleoSpin® TriPrep** RNA, DNA, and protein isolation mini spin kit	10/50/250	740966.10/.50/.250
NucleoSpin® RNA/Protein RNA and protein isolation mini spin kit	10/50/250	740933.10/.50/.250
Protein Quantification Assay Quantification assay for total protein isolated with NucleoSpin® kits	50/250	740967.50/.250
NucleoSpin® RNA/DNA Buffer Set** Buffer set for RNA and DNA isolation, to be used with NucleoSpin® RNA kits	100 (Mini preps)	740944
NucleoSpin® RNA Virus Viral nucleic acid isolation mini spin kit	10/50/250	740956.10/.50/.250
NucleoSpin® RNA Virus F Viral nucleic acid funnel column kit, for up to 1 ml starting volume	25	740958
Medium and high throughput kits		
NucleoSpin® 8 RNA	12 x 8/60 x 8	740698/740698.5
NucleoSpin® 8 RNA Core Kit	48 x 8	740465.4
NucleoSpin® 96 RNA	2 x 96/4 x 96/24 x 96	740709.2/.4/.24
NucleoSpin® 96 RNA Core Kit	4 x 96	740466.4
Total RNA isolation in medium or high throughput, NucleoSpin® technology		
NucleoMag 96 RNA	1 x 96/4 x 96	744350.1/.4
Total RNA isolation kits, medium or high throughput, NucleoMag technology		
NucleoSpin® 8 Virus	12 x 8/60 x 8	740643/740643.5
NucleoSpin® 8 Virus Core Kit	48 x 8	740451.4
NucleoSpin® 96 Virus	2 x 96/4 x 96	740691.2/.4
NucleoSpin® 96 Virus Core Kit	4 x 96	740452.4
Viral nucleic acid isolation kits, medium or high throughput, NucleoSpin® technology		
NucleoMag 96 Virus	1 x 96/4 x 96	744800.1/.4
Viral nucleic acid isolation kits, medium or high throughput, NucleoMag technology		

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* Kits to be used for research purposes only.

** Distribution and use of these products in the USA is prohibited for patent reasons.

Your local distributor

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