

## RNA/DNA/Protein Purification Plus Kit

This kit provides a rapid spin-column method for the isolation and purification of total RNA, genomic DNA and proteins sequentially from a single sample of cultured animal cells, small tissue samples, blood, bacteria, yeast, fungi or plants.

The kit employs two columns: 1) for gDNA purification and 2) for RNA purification utilizing silicon carbide columns (superior for the binding of all RNA sizes including miRNA). The proteins are also purified on the second column after RNA elution. The pro-



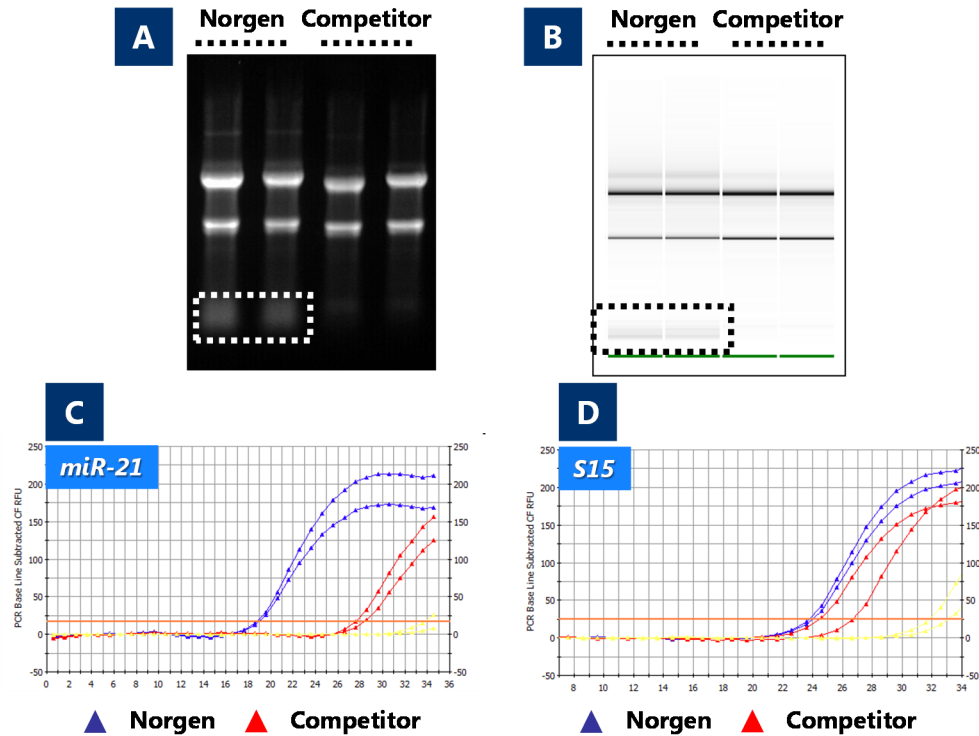
teins are eluted in buffer and are ready for downstream application without any further clean up required. The proteins can be quantified directly, used in western blots, ELISA or mass spectrometry.

Kit Specifications			
Column Binding Capacity (RNA)	50 µg	Average Yield:	
Column Binding Capacity (DNA)	20 µg	HeLa Cells (1 x 10 <sup>6</sup> cells)	15 µg RNA
Column Binding Capacity (Protein)	200 µg	HeLa Cells (1 x 10 <sup>6</sup> cells)	8 µg DNA
Size of RNA Purified	All sizes	HeLa Cells (1 x 10 <sup>6</sup> cells)	150 µg protein
Size of DNA Purified	> 30 kbp	Time to Complete 10 Purifications	30 minutes

### RNA/DNA/Protein Purification Plus Kit Benefits

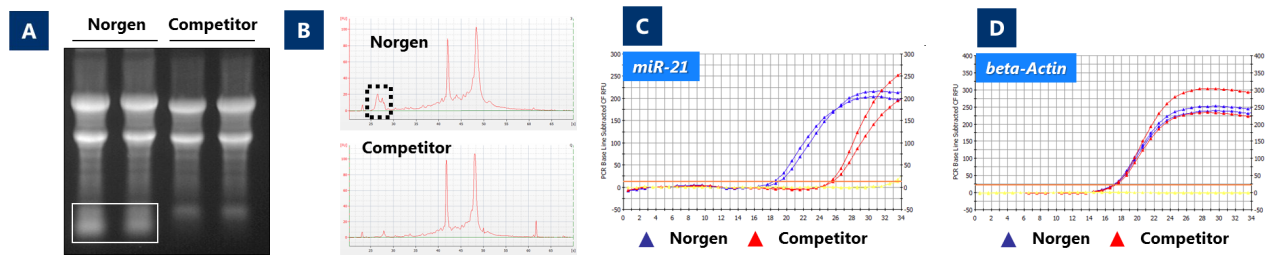
Complete column purification	The RNA, DNA and proteins are all column purified using the same column.
Reduce variability	RNA, DNA and proteins are isolated from a single sample with no splitting of the lysate, thus reducing inconsistent results and variability.
Isolate from small samples	Sequential isolation of RNA, DNA and protein from a single sample. Ideal for precious, difficult to obtain or small samples such as biopsy material or single foci from cell cultures.
Rapid procedure	Isolate total RNA, genomic DNA and total proteins from a single sample in < 30 minutes.
Isolate a diversity of RNA species	All sizes of RNA are isolated, from large mRNA down to microRNA
Process a wide range of sample types	Isolate total RNA, genomic DNA and proteins from cultured animal cells, tissue, blood, bacteria, yeast, fungi and plants.

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**Figure 1. Recovery of True Total RNA including microRNA from HEK-293 Cells.** Panel A is a 1X MOPS 1% agarose gel showing the RNA that was isolated from 2 different samples of ~ 800,000 HEK-293 cells using either Norgen's RNA/DNA/Protein Purification Plus Kit or a competitor's multiple-analyte purification kit. Both kits isolated large RNA (represented by 28S and 18S rRNA) with high integrity but Norgen's RNA/DNA/Protein Purification Plus Kit provided the added benefit of recovering small RNA without any additional protocol. Panel B is a result from a bioanalyzer resolution of the eluted RNA. Similar to the agarose gel, Norgen's RNA/DNA/Protein Purification Plus Kit showed the added benefit of recovering small RNA. The difference in small RNA recovery was also demonstrated by gene-specific RT-qPCR. One microgram of RNA was used in RT-qPCR reactions for human S15 (for Large RNA) and miR-21 (for microRNA) genes. The RNA isolated by Norgen's RNA/DNA/Protein Purification Plus Kit showed similar Ct value to RNA isolated by the competitor's kit for the large RNA (Panel D). However, Norgen's RNA/DNA/Protein Purification Plus Kit showed superior recovery of small RNA including microRNAs as depicted by the miR-21 RT-qPCR (Panel C).

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**Figure 2. Recovery of True Total RNA including microRNA from Hamster Liver.** Panel A is a 1X MOPS 1% agarose gel showing the RNA that was isolated from 2 different samples of 15 mg hamster liver using either Norgen's RNA/DNA/Protein Purification Plus Kit or a competitor's multiple-analyte purification kit. Both kits isolated large RNA (represented by 28S and 18S rRNA) with high integrity but Norgen's RNA/DNA/Protein Purification Plus Kit provided the added benefit of recovering small RNA without any additional protocol. Panel B is a result from a bioanalyzer resolution of the eluted RNA. Similar to the agarose gel, Norgen's RNA/DNA/Protein Purification Plus Kit showed the added benefit of recovering small RNA. The difference in small RNA recovery was also demonstrated by gene-specific RT-qPCR. One microgram of RNA was used in RT-qPCR reactions for hamster beta-Actin (for Large RNA) and miR-21 (for microRNA) genes. The RNA isolated by Norgen's RNA/DNA/Protein Purification Plus Kit showed similar Ct value to RNA isolated by the competitor's kit for the large RNA (Panel D). However, Norgen's RNA/DNA/Protein Purification Plus Kit showed superior recovery of small RNA including microRNAs as depicted by the miR-21 RT-qPCR (Panel C).

### Kit Contents:

1. Lysis Buffer Q
2. Wash Solution A
3. Elution Solution A
4. Elution Buffer F
5. Wash Solution C
6. Binding Buffer A
7. Elution Buffer C
8. Protein Neutralizer
9. Protein Loading Dye
10. gDNA Purification Columns
11. RNA/Protein Purification Columns
12. Collection Tubes
13. Elution tubes (1.7 mL)
14. Product Insert

### Customer-Supplied Reagents and Equipment

- Benchtop microcentrifuge
- 96-100% ethanol
- DL-Dithiothreitol (DTT)
- $\beta$ -mercaptoethanol (optional)
- RNase-free DNase I (optional)
- RNase-free PBS (Animal Cells)
- TE Buffer and lysozyme (Bacteria)
- Resuspension buffer with lyticase (Yeast)
- Liquid nitrogen, mortar and pestle (Tissue, Fungi, Plant)

### Storage Conditions

All solutions should be kept tightly sealed and stored at room temperature. These reagents should remain stable for at least 1 year in their unopened containers. The Protein Loading Dye should be stored at  $-20^{\circ}\text{C}$  after the addition of DL-Dithiothreitol (DTT).

Cat #	Description	Quantity
47700	RNA/DNA/Protein Purification Plus Kit	50 preps