

All-in-One Purification Kit

Norgen's All-in-One Purification Kit provides a rapid method for the isolation and purification of total RNA, including microRNA, genomic DNA and proteins sequentially from a single sample of cultured animal cells, small tissue samples, blood, bacteria, yeast, fungi or plants. In addition, a microRNA Enrichment Column is provided for the optional separate purification of small RNA (<200 nt), allowing for 4-in-1 purification (large RNA, genomic DNA, microRNA and proteins). This kit is an ideal all-in-one solution for researchers studying systems biology, including those who are interested in the interactions of multiple disciplines including RNA interference, genomics, epigenomics, transcriptomics and proteomics. Norgen's All-in-One Purification Kit is especially useful for researchers who are isolating macromolecules from precious, difficult to obtain or small samples such as needle biopsies and single foci from cell cultures, as well as for mutant analysis, RNA interference studies, cell differentiation studies and pathogen detection. Furthermore, analysis will be more reliable since the RNA, DNA and proteins are derived from the same sample without any fractionation, thereby eliminating inconsistent results.



Purification is based on spin column chromatography using Norgen's proprietary resin as the separation matrix. Two different spin columns are provided, and the user can choose whether they wish to isolate total RNA (including microRNA), genomic DNA and total proteins or if they wish to separately isolate microRNA (<200 nt), large RNA (>200 nt), genomic DNA and proteins. In both cases all the macromolecules are column purified without the use of phenol, chloroform or acetone. The purified molecules are of the highest quality and are well suited for many downstream applications including PCR amplifications, RT-PCR and Real-Time PCR, as well as Southern blots, Northern blots, Western blots, and Dot blots, cDNA synthesis, microarrays and mass spectrometry.

All-in-One Purification Kit Benefits

Complete column purification	The RNA, DNA and proteins are all column purified without the use of phenol, chloroform or acetone.
Isolate total or micro-enriched RNA	Two different protocols are provided to isolate either total RNA, including all sizes of RNA from large rRNA to microRNA, or separately isolate microRNA species (<200 nt) and large RNA species (>200 nt)
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.
Rapid procedure	Isolate microRNA, large RNA, genomic DNA and proteins from a single sample in < 40 minutes.
Isolate a diversity of RNA species	All sizes of RNA are isolated, from large mRNA down to microRNA, either separately or combined in a total RNA fraction.
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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Kit Specifications

Column Binding Capacity (RNA)	50 µg	Average Yield:	
Column Binding Capacity (DNA)	20 µg	HeLa Cells (1 x 10 ⁶ cells)	15 µg RNA
Column Binding Capacity (Protein)	200 µg	HeLa Cells (1 x 10 ⁶ cells)	8 µg DNA
Size of RNA Purified	All sizes	HeLa Cells (1 x 10 ⁶ cells)	150 µg protein
Size of DNA Purified	≥ 30 kbp	Time to Complete 10 Purifications	40 minutes for all 4 molecules

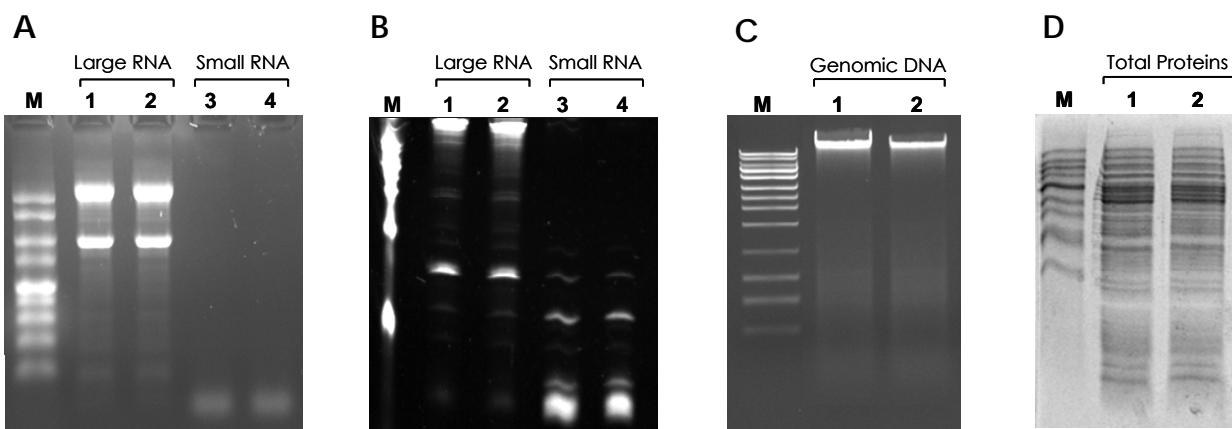


Figure 1. Sequential Isolation of microRNA, Large RNA, Genomic DNA and Proteins from 1 x 10⁶ HeLa Cells. Panels A and B show the separate isolation of large RNA and microRNA from 2 different samples of HeLa cells. Panel A is a 1X MOPS 1% agarose gel and Panel B is a 10% urea-PAGE gel. In both gels, Lane M is Norgen's 1Kb RNA Ladder, Lanes 1 and 2 contain 3 µL out of the 50 µL elutions of the large RNA fraction, and Lanes 3 and 4 contain 3 µL out of the 50 µL elutions of the microRNA fractions. Panel C is a 1% agarose gel showing the gDNA isolated from the same 2 HeLa cell samples. Lane M is Norgen's UltraRanger DNA Ladder and Lanes 1 and 2 contain 10 µL of each of the 100 µL elutions. Panel D is a 12% SDS-PAGE gel that contains the proteins that were isolated from the 2 HeLa cell samples. Lane M is a protein ladder and Lanes 1 and 2 contain 10 µL of the 100 µL elution of proteins that had been column purified. The large RNA, microRNA, gDNA and proteins are all intact and of the highest integrity and quality. Furthermore, the kit allows for the successful separate isolation of microRNA (<200 nt) and large RNA (>200nt).

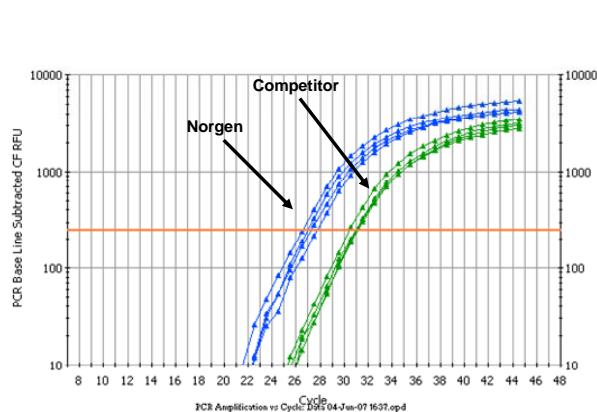


Figure 2. Isolate High Quality RNA

RNA was isolated from HeLa cells using Norgen's All-in-One Purification Kit and a leading market competitor for multiple analyte isolations. The purified RNA was used as the template in a qPCR reaction using GAPDH primers, and the results are shown in the PCR baseline graph to the left. The blue lines correspond to the PCR results when RNA isolated using Norgen's kit was used as the template, while the green lines correspond to the results when RNA isolated using the competitor's kit was used as the template. From the graph it can be seen that Norgen's kit isolated RNA with a greater sensitivity, and that more RNA was isolated from the same input as evidenced by the lower C_T values for the Norgen-isolated RNA.

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All-in-One Purification Kit Procedure (4-in-1 Purification)

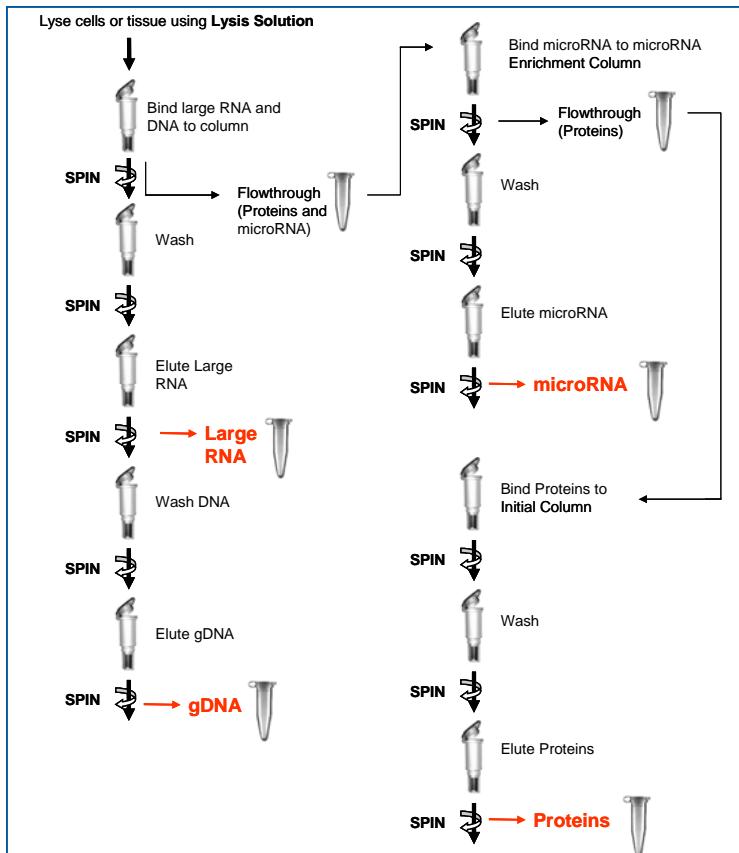


Figure 3. Flowchart Showing the All-in-One Purification Kit Procedure. The All-in-One Purification Kit comes with 2 different protocols allowing the user to isolate genomic DNA, total proteins and either (A) total RNA, which contains all sizes of RNA including microRNA, or (B) to separately isolate large RNA species (>200nt) and small RNA species (<200nt). The diagram to the left depicts the procedure for the isolation of large RNA, genomic DNA, microRNA and total proteins.

Customer-Supplied Reagents and Equipment

- Benchtop microcentrifuge
- 95% ethanol
- Isopropanol
- β-mercaptoethanol (optional)
- PBS (Animal Cells)
- TE Buffer and lysozyme (Bacteria)
- Resuspension buffer with lyticase (Yeast)
- Liquid nitrogen, mortar and pestle (Tissue, Fungi, Plant)
- 70% ethanol (Tissue, Fungi, Plant)

Storage Conditions

The Protein Loading Dye should be stored at -20°C upon arrival. All other solutions should be kept tightly sealed and stored at room temperature. All the reagents should remain stable for at least 1 year in their unopened containers.

Shipping Conditions

The All-in-One Purification Kit is shipped at room temperature.

Cat #	Description	Quantity
24200	All-in-One Purification Kit	20 preps

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