

RNA ISOLATION AND CHARACTERIZATION PROTOCOLS

Edited by

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RNA Isolation and Characterization Protocols offers biological investigators a powerful and highly useful collection of up-to-date methods for the isolation of RNA from a variety of sources, including bacterial, plant, and mammalian cells. These fine-tuned protocols take both the experienced and inexperienced investigator through the nuances of RNA manipulation, from extraction to in vitro translation. The authoritative researchers writing here also include detailed protocols for the analysis and characterization of isolated RNA species and extensive troubleshooting hints and tips to ensure easy reproducibility.

RNA Isolation and Characterization Protocols gives today's bench scientists the single best collection of easily reproducible, step-by-step RNA techniques now available. This book will quickly become indispensable for everyone seeking to manipulate RNA and help set the stage for the coming revolution in RNA-based diagnostic techniques.

FEATURES

- Contains the most useful and recent techniques for isolating RNA
- Covers extraction methods from both prokaryotic and eukaryotic cells
- Provides detailed step-by-step instructions for unflinching reproducibility
- Includes numerous hands-on hints and tips useful for avoiding traps and pitfalls
- Offers even highly skilled researchers many time-saving techniques

CONTENTS

Introduction to Isolating RNA. Large and Small Scale RNA Preparations from Eukaryotic Cells. An Improved Rapid Method of Isolating RNA from Cultured Cells. Isolating RNA with the Cationic Surfactant, Catrimox-14. RNA Extraction from Formalin-Fixed and Paraffin-Embedded Tissues. Extraction and Purification of RNA from Plant Tissues Enriched in Polysaccharides. Isolation of Plant Mitochondrial RNA from Green Leaves. Extraction of RNA from Fresh and Frozen Blood. Isolation of Total RNA from Bacteria. Isolation of Total RNA from Tissues or Cell Lines: *Visualization in Gel*. Isolation of Messenger RNA. UV Spectrometric Analysis of Ribonucleic Acids. Formaldehyde Gel Electrophoresis of Total RNA. Preparation of RNA Dot-Blots. Nonradioactive Northern Blotting. The Use of RNA Probes for the Analysis of Gene Expression: *Northern Blot Hybridization and Ribonuclease Protection Assay*. Analysis of RNA by Northern Blotting Using Riboprobes. RNA Quantitative Analysis from Fixed and Paraffin-Embedded Tissues. Quantitative Analysis of RNA Species by PCR and Solid-Phase Minisequencing. Preparation of Tissue Sections and Slides for mRNA Hybridization. Detecting mRNA in Tissue Sections with Digoxigenin-Labeled Probes. One-Tube RT-PCR

with Sequence Specific Primers. Identification of Differentially Exposed Genes by Nonradioactive Differential Display of Messenger RNA. Characterization of RNA Using Continuous RT-PCR Coupled with ELOSA. Gene Expression Analysis by CD-RT-PCR. Primer Extension Analysis of mRNA. S1 Mapping Using Single-Stranded DNA Probes. Measurements of Rate of Transcription in Isolated Nuclei by Nuclear "Run-Off" Assay. Transcription In Vitro Using Bacteriophage RNA Polymerases. In Vitro Translation of Messenger RNA in a Rabbit Reticulocyte Lysate Cell-Free System. In Vitro Translation of Messenger RNA in a Wheat Germ Extract Cell-Free System. The *Xenopus* Egg Extract Translation System. Purification of Viral dsRNA Genome

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