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Nota di contenuto	RNA Purification and Analysis: Sample Preparation, Extraction, Chromatography; Contents; Preface; Acknowledgments; 1: RNA Extraction, Separation, and Analysis; 1.1 The Need to Be Able to Extract, Manipulate, and Analyze RNA; 1.2 Using Chemical Tools to Solve the Problem of Analysis of Biological Processes; 1.3 The Principle of Chromatography and Solid-Phase Extraction; 1.3.1 Principle of Chromatography; 1.3.2 Mobile Phase Gradient Controls Elution; 1.3.3 Different Types of Column and Eluent Chemistries; 1.3.4 The Principle of Solid-Phase Extraction; 1.4 RNA Chromatography 1.5 Enzymatic Treatment of RNA and Analysis1.5.1 Polyacrylamide Gel Electrophoresis; 1.5.2 RNA Structure Probing with Ribonuclease

Enzymes; 1.6 Content and Organization of This Book; References; 2: Biological and Chemical RNA; 2.1 Why Classify RNA with Biology and Chemistry?; 2.1.1 Chemical Classification of RNA; 2.1.2 Biological Classification of RNA; 2.2 Prokaryotic Cellular RNA; 2.3 Prokaryote Sample Type; 2.3.1 Escherichia coli; 2.3.2 Other Bacteria; 2.4 Eukaryotic Cellular RNA; 2.5 Eukaryote Sample Type; 2.5.1 Yeast; 2.5.2 Other Fungi; 2.5.3 Simple Multicellular Organism; 2.5.4 Soft Animal; 2.5.5 Hard Animal; 2.5.6 Plant; 2.5.7 Cell Culture; 2.6 Other Samples; 2.6.1 Virus; 2.6.2 Soil and Rock; 2.7 Synthetic RNA; 2.7.1 Aptamers; 2.7.2 SELEX; 2.7.3 Short Hairpin RNAs; References; 3: RNA Separation: Substrates, Functional Groups, Mechanisms, and Control; 3.1 Solid-Phase Interaction; 3.1.1 Adsorption of Sample Compounds and Sample Matrix Compounds; 3.1.2 Roles of Solid-Phase Substrate and Functional Group; 3.1.3 Correlation of Interaction Type, Functional Group, and Substrate; 3.1.4 RNA Structure and Solid Surface Interaction; 3.2 The Solid-Phase Substrate and Attachment of Functional Groups; 3.2.1 Polymeric Resin Substrates; 3.2.2 Porous and Nonporous Polymeric Resins; 3.2.3 Monolith Polymeric Columns; 3.2.4 Functionalization of the Polymer; 3.2.5 Silica-Glass-Based Substrates; 3.2.6 Functionalization of Silica; 3.2.7 Agarose and Cellulose Affinity Substrates; 3.2.8 Dextran and Polyacrylamide Gel Filtration Substrates; 3.3 Reverse-Phase Ion-Pairing Separation Mechanism; 3.4 Ion-Exchange Separation Mechanism; 3.5 Chaotropic Denaturing Interaction Mechanism; 3.6 Hybridization; 3.6.1 SELEX; 3.7 Gel Filtration; References; 4: RNA Extraction and Analysis; 4.1 Transcription; 4.1.1 RNA Catalysis; 4.1.2 RNA-Protein Complex Interactions; 4.1.3 Pre-mRNA Splicing; 4.2 Translation; 4.2.1 Post-Transcriptional Control of Eukaryotic Gene Expression; 4.3 Gene Regulation; 4.3.1 RNA Interference Pathway; 4.3.2 Micro RNAs and Their Role in Gene Regulation; 4.4 Use of siRNA to Investigate Gene Function; References; 5: RNA Chromatography; 5.1 Development of RNA Chromatography; 5.2 RNA Chromatography Instrumentation; 5.2.1 The Column Oven; 5.2.2 Ultraviolet (UV) and Fluorescence Detection; 5.2.3 Fragment Collection; 5.3 RNA Chromatography Conditions

Sommario/riassunto

This first book on the market covers the many new and important RNA species discovered over the past five years, explaining current methods for the enrichment, separation and purification of these novel RNAs. Building up from general principles of RNA biochemistry and biophysics, this book addresses the practical aspects relevant to the laboratory researcher throughout, while discussing the performance and potential problems of the methods discussed. An appendix contains a glossary with the important terms and techniques used in RNA analysis. By explaining the basic and working principle
