1. Record Nr. UNINA9910462158003321

| | |
|---|---|
| Titolo | Epigenetic regulation and epigenomics [[electronic resource] /] / edited by Robert A. Meyers |
| Pubbl/distr/stampa | Weinheim, : Wiley-Blackwell, c2012 |
| ISBN | 3-527-66862-4<br>1-283-64410-X<br>3-527-66861-6 |
| Descrizione fisica | 1 online resource (1239 p.) |
| Collana | Advances in molecular biology and medicine |
| Altri autori (Persone) | MeyersRobert A <1936-> (Robert Allen) |
| Disciplina | 572.865 |
| Soggetti | Genetic regulation<br>Epigenesis<br>Electronic books. |
| Lingua di pubblicazione | Inglese |
| Formato | Materiale a stampa |
| Livello bibliografico | Monografia |
| Note generali | Description based upon print version of record. |
| Nota di bibliografia | Includes bibliographical references and index. |
| Nota di contenuto | Epigenetic Regulation and Epigenomics; Contents; Preface and Commentary; List of Contributors; Part I Analytical Methods; 1 RNA Methodologies; 1 Introduction; 2 Subpopulations of RNA; 3 Goals in the Purification of RNA; 4 Methods of Cellular Disruption and RNA Recovery; 5 Inhibition of Ribonuclease Activity; 6 Methods for the Analysis of RNA; 7 Summary; References; 2 All Things ChIP: ChIP-Chip, ChIP-Seq, ChIP-PCR; 1 Introduction; 2 Protein-DNA Binding; 3 ChIP Protocol; 4 ChIP-PCR, ChIP-Chip, or ChIP-Seq. Which Should be Chosen?; 5 Experimental Considerations; 6 Calculating IP Enrichment<br>7 Special Analysis Considerations8 Conclusions; References; 3 Methods for DNA Methylation Analysis; 1 Introduction; 2 Methods of DNA Methylation Analysis; 3 Concluding Remarks; Acknowledgments; References; 4 DNA Methylation Analysis by MALDI Mass Spectrometry; Abbreviations; 1 Introduction to DNA Methylation; 2 Epigenetics and Disease; 3 DNA Methylation Content Analysis by Mass Spectrometry; 4 Specific DNA Methylation Analysis; 5 Introduction to MALDI; 6 Problems of MALDI Analysis of; 7 DNA Sequencing with MALDI Mass Spectrometry Readout<br>8 Primer Extension for the Interrogation of Specific Positions9 |

Quantification; 10 Automation of Sample Preparation, Data Accumulation, and Analysis; 11 Positioning of MALDI MS for DNA Methylation Analysis; 12 Applications of DNA Methylation Analysis by Mass Spectrometry; 13 DNA Methylation Analysis for Tumor Classification; 14 DNA Methylation Analysis for Prognosis and Response to Treatment; 15 Prenatal Diagnosis; 16 Conclusions; References; 5 Tag Sequencing; 1 Library Construction; 2 Advanced Sequencing Technologies; 3 Data Analysis and Bioinformatics; 4 Applications of Tag Sequencing
5 Clinical Applications of Tag Sequencing6 Future Perspectives; Acknowledgments; References; Part II Basic Molecular Mechanisms; 6 Heterochromatin and Euchromatin - Organization, Boundaries and Gene Regulation; 1 Properties and Functions of Heterochromatin; 2 Euchromatin Formation; 3 Boundaries between Heterochromatin and Euchromatin; 4 Insulating against Active Chromatin; Acknowledgments; References; 7 Regulation of Gene Expression; 1 Introduction; 2 Regulation of Gene Expression in Prokaryotes; 3 Regulation of Gene Expression in Eukaryotes; 4 RNA Splicing
5 Role of microRNAs (miRNAs) in the Regulation of Gene Expression6 Chromatin Structure and the Control of Gene Expression; 7 Epigenetic Control of Gene Expression; 8 Gene Regulation by Hormonal Action; 9 Post-Transcriptional Regulation of mRNA; 10 Transport of Processed mRNA to the Cytoplasm; 11 Regulation of Gene Expression at the Level of Translation; Acknowledgments; References; 8 Molecular Genetics of Genomic Imprinting; 1 Genomic Imprinting in Mammals; 2 Imprinted Genes; 3 Molecular Mechanisms; 4 Imprinting and Disease; 5 Human Reproduction; 6 Evolution of Imprinting; References
9 Nuclear Transfer for Cloning Animals

Sommario/riassunto

Epigenetics is a term in biology referring to heritable traits that do not involve changes in the underlying DNA sequence of the organism. Epigenetic traits exist on top of or in addition to the traditional molecular basis for inheritance. The ""epigenome"" is a parallel to the word ""genome,"" and refers to the overall epigenetic state of a cell. Cancer and stem cell research have gradually focused attention on these genome modifications. The molecular basis of epigenetics involves modifications to DNA and the chromatin proteins that associate with it. Methylation, for example, can silence a