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Descrizione fisica	1 online resource (294 pages)
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Nota di contenuto	1. Logic of Epigenetics and Investigation of Potential Gene Regions -- 2. Recognition of Nucleosomes by Chromatin Factors: Lessons from Data-Driven Docking-Based Structures of Nucleosome-Protein Complexes -- 3. Chromatin Dynamics upon DNA Damage -- 4. A Consistent Systems Mechanics Model of the 3D Architecture and Dynamics of Genomes -- 5. Apicomplexa and Histone Variants: What's New? -- 6. Epigenetic Modulation of Circadian Rhythms: Bmal1 Gene Regulation -- 7. Epigenome Editing -- 8. Resetting Cell Fate by Epigenetic Reprogramming -- 9. Cytosine Modifications and Distinct Functions of TET1 on Tumorigenesis -- 10. Role of COX-2 Promoter Methylation and Helicobacter pylori Infection in Impaired Gastric Ulcer Healing -- 11. Epigenetic Regulation of Hepatitis B Virus Replication -- 12. Part 1: The PIWI-piRNA Pathway Is an Immune-Like Surveillance Process That Controls Genome Integrity by Silencing Transposable Elements -- 13. Part 2: Deregulated Expressions of PIWI Proteins and piRNAs as New Candidate Biomarkers and Potential Therapeutic Tools in Cancer.
Sommario/riassunto	Genomics has gathered broad public attention since Lamarck put forward his top-down hypothesis of 'motivated change' in 1809 in his famous book "Philosophie Zoologique" and even more so since Darwin published his famous bottom-up theory of natural selection in "The Origin of Species" in 1859. The public awareness culminated in the much anticipated race to decipher the sequence of the human genome

in 2002. Over all those years, it has become apparent that genomic DNA is compacted into chromatin with a dedicated 3D higher-order organization and dynamics, and that on each structural level epigenetic modifications exist. The book "Chromatin and Epigenetics" addresses current issues in the fields of epigenetics and chromatin ranging from more theoretical overviews in the first four chapters to much more detailed methodologies and insights into diagnostics and treatments in the following chapters. The chapters illustrate in their depth and breadth that genetic information is stored on all structural and dynamical levels within the nucleus with corresponding modifications of functional relevance. Thus, only an integrative systems approach allows to understand, treat, and manipulate the holistic interplay of genotype and phenotype creating functional genomes. The book chapters therefore contribute to this general perspective, not only opening opportunities for a true universal view on genetic information but also being key for a general understanding of genomes, their function, as well as life and evolution in general.

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