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Nota di contenuto	Preface -- Biography -- Chapter1. Historical Perspective of Eukaryotic DNA Replication -- Chapter2. Regulation of replication origins -- Chapter3. Molecular mechanism for chromatin regulation during MCM loading in mammalian cells -- Chapter4. Initiation of DNA replication at the chromosomal origin of E. coli, oriC -- Chapter5. Initiation of DNA replication in the archaea -- Chapter6. Mechanism of lagging strand DNA replication in eukaryotes -- Chapter7. Functions of multiple clamp and clamp-loader complexes in eukaryotic DNA replication -- Chapter8. Termination of eukaryotic replication forks -- Chapter9. Structure of the MCM2-7 double hexamer and its implications for the mechanistic functions of the Mcm2-7 complex -- Chapter10. Architecture of The Saccharomyces cerevisiae Replisome -- Chapter11. Replication domains: genome compartmentalization into functional replication units -- Chapter12. Rif1-dependent regulation of genome replication in mammals -- Chapter13. G-quadruplexes and DNA replication origins -- Chapter14. Interaction of Rif1 protein with G-quadruplex in control of chromosome transactions -- Chapter15. Chromatin replication and histone dynamics -- Chapter16. The temporal regulation of S phase proteins during G1 -- Chapter17. Roles

of SUMO in replication initiation, progression, and termination -- Chapter18. The multiple roles of ubiquitylation in regulating challenged DNA replication -- Chapter19. Regulation of mammalian DNA replication via the ubiquitin-proteasome system -- Chapter20. Coordinating replication with transcription -- Chapter21. Fragility extraordinaire: Unsolved mysteries of chromosome fragile sites -- Chapter22. Cyclin E deregulation and genomic instability -- Chapter23. Replication through repetitive DNA elements and their role in human diseases.

Sommario/riassunto

This book reviews the latest trends and future directions of DNA replication research. The contents reflect upon the principles that have been established through the genetic and enzymatic studies of bacterial, viral, and cellular replication during the past decades. The book begins with a historical overview of the studies on eukaryotic DNA replication by Professor Thomas Kelly, a pioneer of the field. The following chapters include genome-wide studies of replication origins and initiation factor binding, as well as the timing of DNA replications, mechanisms of initiation, DNA chain elongation and termination of DNA replication, the structural basis of functions of protein complexes responsible for execution of DNA replication, cell cycle-dependent regulation of DNA replication, the nature of replication stress and cells' strategy to deal with the stress, and finally how all these phenomena are interconnected to genome instability and development of various diseases. By reviewing the existing concepts ranging from the old principles to the newest ideas, the book gives readers an opportunity to learn how the classical replication principles are now being modified and new concepts are being generated to explain how genome DNA replication is achieved with such high adaptability and plasticity. With the development of new methods including cryoelectron microscopy analyses of huge protein complexes, single molecular analyses of initiation and elongation of DNA replication, and total reconstitution of eukaryotic DNA replication with purified factors, the field is enjoying one of its most exciting moments, and this highly timely book conveys that excitement to all interested readers.