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Life Sciences : Cell Biology

Masai, Hisao, Foiani, Marco (Eds.), Tokyo Metropolitan Institute of Medical Science, Tokyo, Japan

# DNA Replication

## From Old Principles to New Discoveries

- Presents a historical overview of eukaryotic DNA replication by one of the legendary scientists in the field
- Reviews comprehensive compilation of the newest information on DNA replication
- Approaches issues related to DNA replication from various points of view
- Emphasizes the latest results on mechanistic and structural aspects of DNA replication
- Features the most recent development on the genome-wide view of where and when DNA replication starts and stops, and how those profiles are correlated with other genomic signatures

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.

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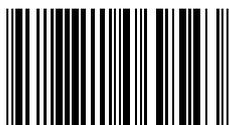
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