Used extensively in cellular and molecular biology research and cytogenetic applications, nucleotide analogs are currently available for the treatment of various diseases. **Nucleoside Triphosphates and Their Analogs: Chemistry, Biotechnology, and Biological Applications** features the contributions of 18 scientists from both academia and industry in the first complete source dedicated entirely to nucleoside triphosphate (NTP). The text provides collective information on the chemical, physiochemical, and biological properties of both natural and modified NTP alongside their application in life sciences.

This book examines the structural components of NTPs and the diverse biological properties and therapeutic consequences, including cytotoxic compounds, antiviral agents, and immunosuppressive molecules. The text describes synthetic methods used for all types of nucleotides and reviews families of enzymes that depend on nucleotides for assembling DNA and RNA molecules. This book also emphasizes the key role NTP plays in the global tracking of conformational changes in nucleic acids and nucleic acid complexes and the investigation of cellular processes and genetic material. The author details the pharmaceutical and diagnostic applications of NTP modification and how fluorescent labeled nucleotide analogs provide sensitive probes for studying the structure, dynamics, and interactions of nucleic acids.

Features:

- Illustrates how NTPs are utilized during the synthesis of nucleic acids on preexisting nucleic acid templates, assembling RNA, or DNA
- Highlights gene expression studies and mutation detection on arrays, microarrays, and *in situ* PCR and RT-PCR
- Describes the structural components of NTP and **their** modifications
- Discusses the biological properties and therapeutic uses of nucleosides
- Details how tracking changes in nucleic acids and nucleic acid complexes are used in cellular and molecular biology research
- Supports concepts with NMR data and more

Nucleoside Triphosphate and Their Analogs: Chemistry, Biotechnology, and Biological Applications discusses the potential of current applications and future research into context with an in-depth analysis of the role anticancer and antiviral nucleoside analogs play in medical treatments, including antiretroviral therapy regimens (for the treatment of HIV), anti-rejection therapy for organ transplants, hematological malignancy therapy, and the treatment of nonmalignant disorders, solid tumors, immunologic diseases, and multiple sclerosis.

DK3304
ISBN 1-57444-498-0
90000
9 781574 444988

Taylor & Francis
Taylor & Francis Group
A CRC PRESS BOOK
www.taylorandfrancis.com