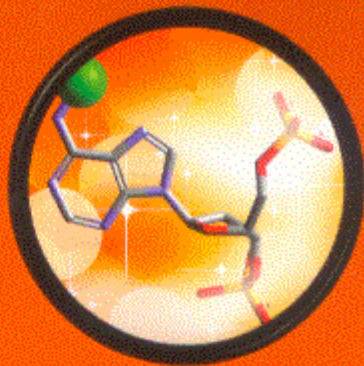


THE CHEMICAL BIOLOGY OF NUCLEIC ACIDS

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This book focuses on the methods for obtaining modified and native nucleic acids, and their biological applications.

Topics covered include:

- chemical synthesis of modified RNA
- expansion of the genetic alphabet in nucleic acids by creating new base pairs
- chemical biology of DNA replication: probing DNA polymerase selectivity mechanisms with modified nucleotides
- nucleic-acid-templated chemistry
- chemical biology of peptide nucleic acids (PNA)
- the interactions of small molecules with DNA and RNA
- the architectural modules of folded RNAs
- genesis and biological applications of locked nucleic acid (LNA)
- small non-coding RNA in bacteria
- microRNA-guided gene silencing
- nucleic acids based therapies
- innate immune recognition of nucleic acid
- light-responsive nucleic acids for the spatiotemporal control of biological processes
- DNA methylation
- frameworks for programming RNA devices
- RNA as a catalyst: The Diels-Alderase-Ribozyme
- evolving an understanding of RNA function by in vitro approaches
- the chemical biology of aptamers: synthesis and applications
- nucleic acids as detection tools
- bacterial riboswitch discovery and analysis

A comprehensive reference for bioorganic chemists, chemical biologists, medicinal chemists, cell biologists, and molecular biologists.

Protein image supplied from 3FU2, Protein Databank www.rcsb.org. Cocrystal structure of a class I preQ1 riboswitch reveals a pseudoknot recognizing an essential hypermodified nucleobase. Klein, D.J., Edwards, T.E., Ferre-D'Amare, A.R. (2009) *Nat. Struct. Mol. Biol.* 16: 343-344.

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