

Preface	xi
Alan S. Perelson and Stuart A. Kauffman	
Rugged Landscapes and Evolution	1
Optimization on Rugged Landscapes	3
Richard Palmer	
A Spin-Glass Model of Evolution	27
C. Amitrano, L. Peliti, and M. Saber	
What Can Physics Do For Biology?	39
D. L. Stein	
Optimization of RNA Structure and Properties	47
P. Schuster	
Somatic Evolution of Antibody Variable-Region Genes & Maturation of the Immune Response	73
Affinity Maturation: A Retrospective View	75
Herman N. Eisen	
Maturation through Hypermutation and Selection	83
C. Berek and M. Apel	
Affinity Maturation on Rugged Landscapes	93
Catherine Macken and Alan S. Perelson	
Maturation of the Humoral Immune Response: A Neo-Darwinian Process?	119
Tim Manser	

- The NK Model of Rugged Fitness Landscapes and Its Application to Maturation of the Immune Response
Stuart A. Kauffman and Edward D. Weinberger 135

- Use of Antibodies as Molecular Mimics to Probe Inter-molecular Interaction Landscapes
William V. Williams, Thomas Kieber-Emmons, David B. Weiner, and Mark I. Greene 177

- Affinity Maturation and Learning in Immune Networks
Gérard Weisbuch and Alan S. Perelson 189

- Auto-Anti-Idiotypic and Antigen as Selective Factors Driving B-Cell Affinity Maturation in the Immune System
Gregory W. Siskind 207

- Somatic Mutation and the Antibody Repertoire: A Computational Model of Shape Space
Richard G. Weinand 215

Applied Molecular Evolution 237

- Evolution of Proteins from Random Sequences: A Model for the Protein Sequence Space and an Experimental Approach
Wlodek Mandecki 239

- Studies in the Evolution of Biological Activity from Random Sequences
Marshall S. Z. Horwitz, Dipak K. Dube, and Lawrence A. Loeb 255

- The Catalytic Potential of RNA
Debra L. Robertson and Gerald F. Joyce 265

Origin of Life Models 279

- Dynamics of Autocatalytic Reaction Networks
P. Schuster 281

Index