Advances in computer technology have led to unforeseeable possibilities in the theoretical study of biological processes. The purpose of the present work is to review, update and summarize the applicability of molecular recognition theory in quantum biology and quantum biochemistry.

An introductory discussion of evolution and selection, with representative examples of theoretical studies on the genetic information carriers, serves to focus the problem and the possible approach to its solution. The main part of the text is concerned with the development of the theory of molecular recognition and the quantitative description of recognition processes. Detailed discussions of the evaluation of interaction energies and of the Monte Carlo techniques for the study of solvation are included.

A valuable feature of this work is its comprehensive summary (in tabular form and in figures) of all the practical information required for the theoretical construction of biopolymers and the evaluation of their interactions.

This book will be useful not only to those involved in the study of biomolecular recognition, but also to those working with polypeptides and polynucleotides, surfaces and membranes, chemical senses, or with the theoretical design of new enzymes, drugs, and flavors. It will be of particular interest to researchers in quantum chemistry wishing to work on quantum biology and quantum biochemistry as well as to biologists, biochemists and pharmaceutical chemists interested in complementing their experimental research with theoretical calculations.

ISBN 0-444-41736-2