

Introduction to

MACROMOLECULAR BINDING EQUILIBRIA

Macromolecules in the body form noncovalent associations, such as DNA-protein or protein-protein complexes, that control and regulate numerous cellular functions. Understanding how changes in the concentration of these macromolecules can trigger physiological responses is essential for researchers developing drug therapies to treat diseases affected by these imbalances.

Introduction to Macromolecular Binding Equilibria gives students in medicinal chemistry, pharmaceuticals, and bioengineering the necessary background in biophysical chemistry for research applications in drug discovery and development. Building upon a fundamental knowledge of calculus and physical chemistry, this compact, graduate-level text prepares students for advanced work in solution thermodynamics and binding phenomena and applying methods in this book to their own research.

Relating theoretical concepts to real examples drawn from the research literature, this book—

- Summarizes the structural and qualitative features of biopolymer-ligand binding sites for small molecules
- Highlights the influence of one ligand species on the uptake of another for site-specific and non-site-specific binding
- Considers the effects of hydration, salt, and pH in binding phenomena
- Explains the formulation of binding isotherms for simple mathematical models
- Examines binding cooperativity and thermodynamic linkage interactions among multiple ligands

This book describes the underlying theory of binding phenomena and explains how to apply the binding polynomial approach for building models and interpreting data. It also covers practical considerations for setting up binding experiments and describes how to obtain true thermodynamic isotherms unbiased by model assumption via model-free analysis of binding data.



CRC Press

Taylor & Francis Group
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6000 Broken Sound Parkway, NW
Suite 300, Boca Raton, FL 33487

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New York, NY 10016

2 Park Square, Milton Park
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52985

ISBN 1-4200-5298-5



9 781420 052985

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