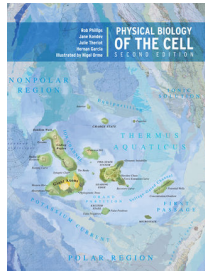


PHYSICAL BIOLOGY OF THE CELL

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DESCRIPTION:

Physical Biology of the Cell is a textbook for a first course in physical biology or biophysics for undergraduate or graduate students. It maps the huge and complex landscape of cell and molecular biology from the distinct perspective of physical biology. As a key organizing principle, the proximity of topics is based on the physical concepts that unite a given set of biological phenomena. Herein lies the central premise: that the appropriate application of a few fundamental physical models can serve as the foundation of whole bodies of quantitative biological intuition, useful across a wide range of biological problems. The Second Edition features full-color illustrations throughout, two new chapters, a significantly expanded set of end-of-chapter problems.

CONTENTS:**Part I: The Facts of Life**

1. Why: Biology by the Numbers
2. What and Where
3. When: Stopwatches at Many Scales
4. Who: "Bless the Little Beasties"

Part II: Life at Rest

5. Mechanical and Chemical Equilibrium
6. Entropy Rules!
7. Two-State Systems
8. Random Walks and the Structure of Macromolecules
9. Electrostatics for Salty Solutions
10. Beam Theory
11. Biological Membranes

Part III: Life in Motion

12. The Mathematics of Water
13. A Statistical View of Biological Dynamics
14. Crowded and Disordered Environments
15. Rate Equations and Dynamics in the Cell
16. Dynamics of Molecular Motors
17. Biological Electricity
18. Light and Life - NEW CHAPTER

Part IV: The Meaning of Life

19. Organization of Biological Networks
20. Biological Patterns: Order in Space and Time - NEW CHAPTER
21. Sequences, Specificity, and Evolution
22. Whither Physical Biology?