# Recommended Textbooks — Macromolecular Structures

| Aspect | Essential Cell Biology (Alberts, 6e) | Molecular Cell Biology (Lodish, 9e) | Lehninger Principles of Biochemistry |
|---|---|---|---|
| Level | Introductory, very accessible, designed for students without prior biology. | Advanced, detailed, assumes some biology knowledge. | Intermediate; focuses on biochemical foundations, quantitative approach. |
| Coverage | Macromolecules, DNA, expression, membranes, signaling, cytoskeleton — sufficient for the whole course. | All topics + deeper molecular mechanisms, experimental techniques, advanced molecular genetics. | Covers water chemistry, amino acids, protein structure, enzymes, metabolism; not full cell biology. |
| Strengths | Clear explanations, excellent figures, ideal for core learning objectives. | Comprehensive reference, great for project work or thesis preparation. | Excellent clarity on biochemical concepts; supports quantitative understanding of energy, folding, enzyme kinetics. |
| Weaknesses | Less detailed on advanced molecular techniques. | Dense and potentially overwhelming for students with no biology background. | Does not cover cell signaling, membranes, or genetics in detail — must be integrated with a cell biology text. |

## Recommended Combination of Texts

For this course, students are advised to use:

• Essential Cell Biology (6th ed.) — Primary textbook (follow lectures and core topics)

• Lehninger Principles of Biochemistry — Selected chapters only (water chemistry, amino acids, protein structure, enzymes, basic metabolism)

• Petsko & Ringe OR Brändén & Tooze — For understanding protein structure-function relationship (optional deep dive)

• Physical Biology of the Cell OR Molecular Driving Forces — Optional, for students interested in a quantitative/biophysical perspective

• Vo-Dinh — Nanobiomedicine chapters for the final section of the course

## Bibliografia

**Essential Cell Biology (6th ed.).** Bruce Alberts, Karen Hopkin, Alexander Johnson, David Morgan, Keith Roberts, Peter Walter. 6ª ed., 2023, W. W. Norton & Company, ISBN-13: 978-1324033356

**Lehninger Principles of Biochemistry (8th ed.).** David L. Nelson, Michael M. Cox, Aaron Hoskins. 8ª ed., 2021, W. H. Freeman / Macmillan Learning, ISBN-13: 978-1319228002

**Molecular Cell Biology (9th ed.).** Harvey Lodish et al.. 9ª ed., 2021, W. H. Freeman / Macmillan Learning, ISBN-13: 978-1319208523

**Protein Structure and Function.** Gregory A. Petsko, Dagmar Ringe. Oxford University Press, ISBN 978-0199556847

**Introduction to Protein Structure (2nd ed.).** John Brändén, John Tooze. Garland / Routledge, ISBN 978-0815323051

**Physical Biology of the Cell.** Rob Phillips, Jane Kondev, Julie Theriot, Hernan Garcia. Garland Science / Taylor & Francis, ultima edizione, ISBN 978-0815344506

**Molecular Driving Forces (2nd ed.).** Ken A. Dill, Sarina Bromberg. Garland Science / Routledge, **ISBN-10**: 0815320515 ; **ISBN-13**: 978-0815320517

**Nanotechnology in Biology and Medicine.** Joseph R. Vo-Dinh (Editor). CRC Press / Routledge, ultima edizione disponibile, **ISBN-13**: 978-1315374581