



Cell Biology

John Paul

Thom Paul.

11

LOW-PRICED EDITION

Contents

	PAGE
I. THE NATURE OF CELLS	
1. The Cell Theory	5
<i>Cells and the biosphere – The cell theory – General cellular organization</i>	
II. THE MOLECULAR BASIS OF CELLULAR STRUCTURE	
2. Macromolecules	23
<i>Nucleic acids – Proteins – Polysaccharides</i>	
3. Biological Membranes	38
✓ <i>Lipids and Lipoproteins – Membranes – The cell membrane – The external cell coat – The nuclear membrane – Other membranous structures – Complex membranous structures and coacervates</i>	
III. THE PHYSICOCHEMICAL BASIS OF CELLULAR ACTIVITY	
4. Energy in Biological Systems	53
✓ <i>Bioenergetics – The movement of electrons – The mitochondrion</i>	
5. Energy Transducers	67
<i>Radiant to chemical energy – Photosynthesis – The chloroplast – Light receptors – Chemical to radiant energy – Chemical to mechanical energy – Chemical to osmotic energy</i>	✓ 9

Contents

	PAGE
✓ 6. Synthesis of Proteins and Nucleic Acids	80
<i>DNA as genetic material – Synthesis of nucleic acids – The nucleolus – Protein synthesis</i>	
IV. THE ORGANIZATION OF CELLULAR ACTIVITY	
7. The Control and Integration of Function	99
✓ <i>Enzymically catalysed reactions – Feedback control – Feedback inhibition – Enzyme repression and induction – Cyclic behaviour</i>	
8. Reproduction and Heredity	113
<i>The structure of chromosomes – Behaviour of chromosomes in cell division – Principles of genetic analysis – Microbial genetics – Bacteriophage genetics – The genetic code – Anticodons and 'Wobble'</i>	
9. Interrelationships among Intracellular Structures	139
<i>Topological relationships – Nucleocytoplasmic connections – Compartmentation – Intracellular Movement</i>	
10. Cytodifferentiation	149
<i>Morphogenesis in Protista – Differentiation in multicellular organisms – Intrinsic and extrinsic factors in differentiation – Possible mechanisms of differentiation</i>	
11. Cellular Interaction	162
<i>Cell contact and adhesion – Cell aggregation – Other morphogenetic interactions – Homeostasis in the adult</i>	
V. THE ORIGIN AND EVOLUTION OF CELLS	
<i>Origin of organic substances – Protobacteria – Specialization</i>	173
BIBLIOGRAPHY	
	182
INDEX	
	215