

Contents

Preface to the Fourth Edition v

Part I. THE CELL

1. Life and Protoplasm 3
2. Protoplasm, the Cell, and the Organism 16
3. Cell Division in Relation to Reproduction 40
4. The Chemical and Physical Structure of Protoplasm 64
5. Enzymes: How Cells Promote Chemical Activities 99
6. Osmosis and Other Mechanisms by Which Cells Take In and Give Off Materials 112
7. Animal Cells and Their Nutrition 126
8. Common Pathways of Cellular Metabolism 141
9. Nutrition of Green Plant Cells 158
10. Other Modes of Nutrition; Conservation of Food Elements 173
11. Responsiveness in Single Cells 189

Part II. MULTICELLULAR PLANTS

12. Reproduction in Multicellular Plants 203
13. Nutrition of Multicellular Plants 236
14. The Responses of Higher Plants 259

Part III. MULTICELLULAR ANIMALS, ESPECIALLY MAN

15. Embryonic Development; Differentiation of the Tissues 271
16. The Digestive System in Man and Other Multicellular Animals 291

viii - Contents

17. The Circulatory System	318
18. Absorption, Metabolism, and the Diet	339
19. Respiration	357
20. Excretion	369
21. Reproduction in Multicellular Animals	380
22. The Endocrine Glands	398
23. Responses of Higher Animals: The Receptors	419
24. Responses of Higher Animals: The Effectors	431
25. Responses of Higher Animals: The Nervous System	447

Part IV. HEREDITY AND EVOLUTION

26. Heredity	475
27. Genes: Nature and Mode of Action	520
28. Natural Selection; Origin of Species	538
29. The Consequences of Evolution	552
30. Ecology and Evolution	573
31. The Plant Kingdom	592
32. The Animal Kingdom	624
Appendix I—Classification of Organisms	679
Appendix II—Glossary	685
Index	699