

Contents in Brief

CONTENTS IN BRIEF

Part I The Basic Principles of Gene Cloning and DNA Analysis 1

- 1 Why Gene Cloning and DNA Analysis are Important 3
- 2 Vectors for Gene Cloning: Plasmids and Bacteriophages 13
- 3 Purification of DNA from Living Cells 25
- 4 Manipulation of Purified DNA 47
- 5 Introduction of DNA into Living Cells 75
- 6 Cloning Vectors for *Escherichia coli* 93
- 7 Cloning Vectors for Eukaryotes 111
- 8 How to Obtain a Clone of a Specific Gene 135
- 9 The Polymerase Chain Reaction 157

Part II The Applications of Gene Cloning and DNA Analysis in Research 173

- 10 Sequencing Genes and Genomes 175
- 11 Studying Gene Expression and Function 201
- 12 Studying Genomes 225

Part III The Applications of Gene Cloning and DNA Analysis in Biotechnology 245

- 13 Production of Protein from Cloned Genes 247
- 14 Gene Cloning and DNA Analysis in Medicine 269
- 15 Gene Cloning and DNA Analysis in Agriculture 291
- 16 Gene Cloning and DNA Analysis in Forensic Science and Archaeology 311

Glossary 329

Index 345