

Brief Table of Contents

Contents viii

Preface xx

Part 1. GENES AND CHROMOSOMES 1

Chapter 1. Genes Are DNA 2

Chapter 2. Genes Code for Proteins 26

Edited by Esther Siegfried, Pennsylvania State University, Altoona

Chapter 3. Methods in Molecular Biology and Genetic Engineering 42

Edited by John Brunstein, University of British Columbia

Chapter 4. The Interrupted Gene 79

Edited by Donald Forsdyke, Queens University

Chapter 5. The Content of the Genome 98

Chapter 6. Genome Sequences and Gene Numbers 118

Chapter 7. Clusters and Repeats 139

Chapter 8. Genome Evolution 159

Chapter 9. Chromosomes 189

Edited by Hank W. Bass, Florida State University

Chapter 10. Chromatin 220

Part 2. DNA REPLICATION AND RECOMBINATION 262

Chapter 11. The Replicon 263

Edited by Stephen D. Bell, Oxford University

Chapter 12. Extrachromosomal Replicons 282

Edited by Søren Johannes Sørensen & Lars Hestbjerg Hansen, University of Copenhagen

Chapter 13. Bacterial Replication Is Connected to the Cell Cycle 299

Edited by Barbara Funnell, University of Toronto

Chapter 14. DNA Replication 320

Edited by Peter Burgers, Washington University Medical School

Chapter 15. Homologous and Site-Specific Recombination 348

Edited by Hannah L. Klein & Samantha Hoot, New York University Langone Medical Center

Chapter 16. Repair Systems 391

Chapter 17. Transposable Elements and Retroviruses 419

Edited by Damon Lisch, University of California, Berkeley

Chapter 18. Somatic Recombination and Hypermutation in the Immune System 458

Edited by Paolo Casali, Institute for Immunology, University of California, Irvine

Part 3. TRANSCRIPTION AND POSTTRANSCRIPTIONAL MECHANISMS 503

Chapter 19. Prokaryotic Transcription 504

Edited by Richard Gourse, University of Wisconsin, Madison

Chapter 20. Eukaryotic Transcription 546

Chapter 21. RNA Splicing and Processing 573

Edited by Xiang-Dong Fu, University of California, San Diego, School of Medicine

Chapter 22. mRNA Stability and Localization 618

Edited by Ellen Baker, University of Nevada, Reno

Chapter 23. Catalytic RNA 642

Edited by Douglas J. Briant, University of Victoria

Chapter 24. Translation 665

Edited by Cheryl Keller Capone, Pennsylvania State University

Chapter 25. Using the Genetic Code 704

*Edited by John Perona, University of California,
Santa Barbara*

Part 4. GENE REGULATION 734

Chapter 26. The Operon 735

*Edited by Liskin Swint-Kruse, University of Kansas
School of Medicine*

Chapter 27. Phage Strategies 767

**Chapter 28. Eukaryotic Transcription
Regulation 795**

**Chapter 29. Epigenetic Effects Are
Inherited 828**

*Edited by Trygve Tollefsbol, University of
Alabama, Birmingham*

Chapter 30. Regulatory RNA 861

Glossary 881

Index 905