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Nota di contenuto	Front Cover; Biotechnology: A Laboratory Course; Copyright Page; Contents; Preface to the Second Edition; Preface to the First Edition; Acknowledgments; Suggested Schedule for Exercises; Introductory Notes: Record Keeping and Safety Rules; Format of Student Laboratory Records; The Ten Commandments of Record Keeping; Safety Rules in the Laboratory; Exercise 1. Aseptic Technique and Establishing Pure Cultures: The Streak Plate and Culture Transfer; Exercise 2. Preparation of Culture Media; Exercise 3. The Growth Curve; Exercise 4. Isolation of Plasmid DNA from Escherichia coli: The Mini-Prep Exercise 5. Purification, Concentration, and Quantitation of DNAExercise 6. Large-Scale Isolation of Plasmid DNA by Column Chromatography; Exercise 7. Amplification of a lacZ Gene Fragment by the Polymerase Chain Reaction; Exercise 8. Restriction Digestion and Agarose Gel Electrophoresis; Exercise 9. Southern Transfer; Exercise 10. Preparation, Purification, and Hybridization of Probe; Exercise 11. Transformation of Saccharomyces cerevisiae; Exercise 12. Isolation of Plasmid from Yeast and Escherichia coil Transformation; Exercise 13. Protein Assays

Exercise 14. Qualitative Assay for b-Galactosidase in Yeast Colonies; Exercise 15. Determination of b-Galactosidase in Permeabilized Yeast Cells; Exercise 16. Assay of b-Galactosidase in Cell Extracts; Exercise 17. b-Galactosidase Purification; Exercise 18. Western Blot: Probe of Protein Blot with Antibody to b-Galactosidase; Appendix 1. Alternative Protocols and Experiments; Exercise 1A Isolation and Characterization of Auxotrophic Yeast Mutants; Exercise 2A Measurement of pH; Exercise 3A Use of the Spectrophotometer; Exercise 6A Isolation of Plasmid DNA: The Maxi-Prep; Exercise 10A Colony Hybridization; Appendix 2. Buffer Solutions; Appendix 3. Preparation of Buffers and Solutions; Appendix 4. Properties of Some Common Concentrated Acids and Bases; Appendix 5. Use of Micropipettors; Appendix 6. Safe Handling of Microorganisms; Appendix 7. List of Cultures; Appendix 8. Storage of Cultures and DNA; Appendix 9. Sterilization Methods; Appendix 10. Preparation of Stock Solutions for Culture Media; Appendix 11. Growth in Liquid Medium; Appendix 12. Determination of Viable Cells; Appendix 13. Determination of Cell Mass; Appendix 14. Determination of Cell Number; Appendix 15. Nomenclature of Strains; Appendix 16. Glassware and Plasticware; Appendix 17. Preparation of Tris and EDTA; Appendix 18. Basic Rules for Handling Enzymes; Appendix 19. Effects of Common Contaminants on Protein Assays; Appendix 20. Manufacturers' and Distributors' Addresses; Appendix 21. Surfing the Bionet: World Wide Web Addresses; Glossary; Index

Sommario/riassunto

The objectives of this Second Edition of Biotechnology: A Laboratory Course remain unchanged: to create a text that consists of a series of laboratory exercises that integrate molecular biology with protein biochemistry techniques while providing a continuum of experiments. The course begins with basic techniques and culminates in the utilization of previously acquired technical experience and experimental material. Two organisms, *Saccharomyces cerevisiae* and *Escherichia coli*, a single plasmid, and a single enzyme are the experimental material, yet the procedures and
