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Nota di contenuto	Front matter -- Preface -- Contents -- 1 Introducing the Bacterial Antibiotic Sensor Mini Project -- 2 Identifying Conserved Elements in the Toxin Sensor and Designing Mutants to Test Whether They are Important for Function -- 3 Designing Primers for Site-Directed Mutagenesis -- 4 Performing Site-Directed Mutagenesis -- 5 Purifying Mutant Toxin Sensor DNA from Bacterial Cells and Evaluating its Quality Using Agarose Gel Electrophoresis and UV Spectroscopy -- 6 Preparing DNA Template for Mutant RNA Sensor Synthesis Using a Restriction Endonuclease -- 7 Synthesizing the ykkCD Mutant Toxin Sensor RNA in vitro -- 8 Purifying the ykkCD Mutant Toxin Sensor RNA and Evaluating its Purity Using Denaturing PAGE and UV spectrometry -- 9 Evaluating the Ability of the ykkCD Toxin Sensor to Recognize the Antibiotic Tetracycline Using Fluorescent Quenching -- 10 Evaluating Antibiotic Binding to Blood Serum Albumin Using Fluorescence Spectroscopy -- 11 Understanding the Importance of Buffers in Biological Systems -- 12 Molecular Visualization of an Enzyme, Acetylcholinesterase -- 13 Determining the Efficiency of the Enzyme Acetylcholine Esterase Using

Steady-State Kinetic Experiment -- 14 Separation of the Phosphatidylcholines Using Reverse Phase HPLC -- List of Figures

Sommario/riassunto

Biochemistry laboratory manual for undergraduates - an inquiry based approach by Gerczei and Pattison is the first textbook on the market that uses a highly relevant model, antibiotic resistance, to teach seminal topics of biochemistry and molecular biology while incorporating the blossoming field of bioinformatics. The novelty of this manual is the incorporation of a student-driven real real-life research project into the undergraduate curriculum. Since students test their own mutant design, even the most experienced students remain engaged with the process, while the less experienced ones get their first taste of biochemistry research. Inclusion of a research project does not entail a limitation: this manual includes all classic biochemistry techniques such as HPLC or enzyme kinetics and is complete with numerous problem sets relating to each topic.