

Experimental Techniques in Molecular Biology

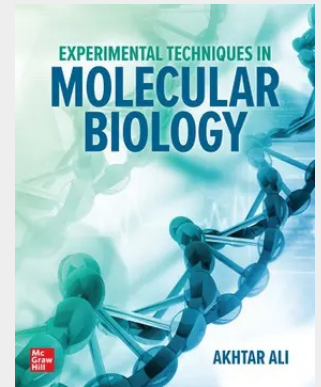
Learn to get the most out of your molecular biology experiments. *Experimental Techniques in Molecular Biology* is a comprehensive, hands-on resource designed to equip students and researchers with the essential tools and knowledge to explore biology at the molecular level. This unique guide demonstrates how to identify and characterize organisms, locate genes or disease-causing agents, and apply molecular insights to real-world biological challenges. Covering a wide range of laboratory techniques essential to recombinant DNA technology, this book brings together everything you need in one accessible volume. You'll learn how to target nucleic acids—both single- and double-stranded RNA and DNA—as well as proteins from diverse organisms. Step-by-step instructions guide you through preparing solutions and buffers, and extracting RNA, dsRNA, DNA, and proteins from virus-infected plant tissues, fungi, blood, bacteria, nematodes, and insects and other animals. The book thoroughly explains techniques for isolation, characterization, quantification, and sequencing. Each method is presented with clear background information, a detailed rationale, and a breakdown of the reagents used and their functions. Perfect for both the classroom and the laboratory, this guide empowers you to confidently perform and understand the molecular techniques at the core of today's bioscience research.

- Features lab techniques not present in other core textbooks
- Includes 100 full-color illustrations for visual clarity
- Authored by a seasoned academic with extensive teaching and research experience

Learn how to get the most out of your molecular biology experiments. *Experimental Techniques in Molecular Biology* is a comprehensive, hands-on resource designed to equip students, researchers and laboratory professionals with the practical skills and foundational knowledge needed to explore biology at the molecular level. This essential and unique resource provides a comprehensive guide to identifying and characterizing organisms, locating genes and disease-causing agents, and applying molecular insights to solve real-world biological challenges. Covering a broad range of laboratory techniques fundamental to recombinant DNA technology, the book brings together everything needed in one accessible volume. Readers will learn how to work with nucleic acids, including single- and double-stranded RNA and DNA—as well as proteins from a wide variety of organisms. The book offers detailed, step-by-step laboratory protocols for working with nucleic acids and proteins from a variety of biological sources, including virus-infected plant tissues, fungi, and other biological specimens. Readers will learn how to prepare laboratory solutions and buffers, as well as extract and analyze RNA, dsRNA, DNA, and proteins with confidence, accuracy, and precision. Each technique is presented with a clear conceptual foundation, practical rationale, and thorough explanations of the reagents and their functions, making complex molecular procedures easier to understand and apply. The text also covers essential methods for the isolation, quantification, in vitro amplification, and manipulation, cloning into plasmid vectors, characterization, and sequencing of nucleic acids, as well as the detection of proteins by serological techniques. Ideal for both classroom instruction and laboratory application, this book serves as a valuable reference for anyone seeking to strengthen their understanding of molecular biology techniques and their applications in contemporary bioscience research.

Key Features:

- Comprehensive coverage of core and advanced molecular biology laboratory techniques
- Step-by-step experimental protocols with practical guidance
- Covers techniques often absent from core molecular biology textbooks
- Includes 100 full-color illustrations to enhance understanding and visualization
- Written by an experienced academic and researcher with extensive teaching and research experience



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