

Methods in Molecular Biology™

VOLUME 162

Capillary Electrophoresis of Nucleic Acids

Volume I

***Introduction to the Capillary
Electrophoresis of Nucleic Acids***

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HUMANA PRESS

Capillary Electrophoresis Of Nucleic Acids Methods In Molecular Biology

Alan R. Clarke



Capillary Electrophoresis Of Nucleic Acids Methods In Molecular Biology:

Capillary Electrophoresis of Nucleic Acids Keith R. Mitchelson, Jing Cheng, 2008-02-05 The development of PCR which enables extremely small amounts of DNA to be amplified led to the rapid development of a multiplicity of analytical procedures that permit use of this new resource for the analysis of genetic variation and for the detection of disease causing mutations. The advent of capillary electrophoresis CE with its power to separate and analyze very small amounts of DNA has also stimulated researchers to develop analytical procedures for the CE format. The advantages of CE in terms of speed and reproducibility of analyses are manifold. Furthermore the high sensitivity of detection and the ability to increase sample throughput with parallel analysis has led to the creation of a full range of analysis of DNA molecules from modified DNA adducts and single strand oligonucleotides through PCR amplified DNA fragments and whole chromosomes. Capillary Electrophoresis of Nucleic Acids focuses on analytical protocols that can be used for detection and analysis of mutations and modification from precise DNA loci through entire genomes of organisms. Important practical considerations for CE such as the choice of separation media electrophoresis conditions and the influence of buffer additives and dyes on DNA mobility are discussed in several key chapters and within particular applications.

Methods in Molecular Biology: Capillary electrophoresis of nucleic acids: Introduction to the capillary electrophoresis of nucleic acids John M. Walker, 1984

Methods in Molecular Biology: Capillary electrophoresis of nucleic acids: Practical applications of capillary electrophoresis John M. Walker, 1984

Capillary Gel Electrophoresis Andras Guttman, László Hajba, 2021-12-04
Capillary Gel Electrophoresis and Related Microseparation Techniques covers all theoretical and practical aspects of capillary gel electrophoresis. It also provides an excellent overview of the key application areas of nucleic acid protein and complex carbohydrate analysis affinity based methodologies micropreparative aspects and related microseparation methods. It not only gives readers a better understanding of how to utilize this technology but also provides insights into how to determine which method will provide the best technical solutions to particular problems. This book can also serve as a textbook for undergraduate and graduate courses in analytical chemistry analytical biochemistry molecular biology and biotechnology courses. Covers all theoretical and practical aspects of capillary gel electrophoresis. Excellent overview of the key applications of nucleic acid protein and complex carbohydrate analysis affinity based methodologies micropreparative aspects and related microseparation methods. Teaches readers how to use the technology and select methods that are ideal for fundamental problems. Can serve as a textbook for undergraduate and graduate courses in analytical chemistry analytical biochemistry molecular biology and biotechnology courses.

Capillary Electrophoresis of Biomolecules Nicola Volpi, Francesca Maccari, 2016-05-01 This book details key techniques used to investigate Capillary electrophoresis CE. It focuses on simple and complex carbohydrates polysaccharides amino acids peptides and proteins enzymes and nucleic acids.

Peptide Nucleic Acids Peter E. Nielsen, 2008-02-04 Peptide nucleic acids PNAs have now existed for slightly more than

ten years with the interest in and applications of this pseudopeptide DNA mimic steadily increasing during the entire period PNAs have rapidly attracted the attention of scientists from a diversity of fields ranging from bio organic and biophysical chemistry to prebiotic evolution and from molecular biology to genetic diagnostics and drug development Many of the applications take advantage of the unique properties of PNA an uncharged pseudopeptide that distinguish this DNA mimic from more traditional DNA analogs Rather than trying to create a comprehensive collection of all published methods and protocols involving PNA many of which have not yet been validated I have decided to concentrate on select protocols that are either very well established by several groups around the world such as PCR clamping and in situ hybridization or on new methods that may have broader future impact Basic methods for PNA oligomer synthesis and analyses have also been included I am very grateful to those friends and colleagues who have enthusiastically contributed their work discussions and writing and thereby made this book possible Peter E Nielsen v Contents Preface v Contributors ix IINTRODUCTION 1 PNA Technology Peter E Nielsen 3 II CHEMISTRY 2 Solid Phase Synthesis of PNA Oligomers Frederik Beck 29 3 Synthesis of PNA Peptide Conjugates Satish Kumar Awasthi and Peter E Nielsen 43 4 Parallel Synthesis of PNA Peptide Conjugate Libraries Satish Kumar Awasthi and Peter E Nielsen

Transgenesis Techniques Alan R. Clarke, 2008-02-05 The past decade has witnessed a spectacular explosion in both the development and use of transgenic technologies Not only have these been used to aid our fundamental understanding of biologic mechanisms but they have also facilitated the development of a range of disease models that are now truly beginning to impact upon our approach to human disease Some of the most exciting model systems relate to neurodegenerative disease and cancer where the availability of appropriate models is at last allowing radically new therapies to be developed and tested This latter point is of particular significance given the current concerns of the wider public over both the use of animal models and the merits of using genetically modified organisms Arguably advances of the greatest significance have been made using mammalian systems driven by the advent of embryonic stem cell based strategies and more recently by cloning through nuclear transfer For this reason this new edition of Transgenesis Techniques focuses much more heavily on manipulation of the mammalian genome both in the general discussions and in the provision of specific protocols

Fingerprinting Techniques in Food Authentication and Traceability K. S. Siddiqi, Leo M.L. Nollet, 2018-10-08 There is an increasing interest by consumers for high quality food products with a clear geographical origin With these products in demand suitable analytical techniques are needed for the quality control Current analytical approaches are mass spectrometry techniques spectroscopic techniques separation techniques and others Fingerprinting Techniques in Food Authentication and Traceability discusses the principles of the techniques together with their advantages and drawbacks and reported applications concerning geographical authenticity A combination of methods analyzing different types of food compounds seems to be the most promising approach to establish the geographical origin The abundant acquired data are analyzed by chemometrics Producing safe and high quality food is a prerequisite to ensure consumer

health and successful domestic and international trade and is critical to the sustainable development of national agricultural resources. Systems to trace food or feed products through specified stages of production, processing and distribution play a key role in assuring food safety. Analytical techniques that enable the provenance of food to be determined provide an independent means of verifying traceability systems and also help to prove product authenticity to combat fraudulent practices and to control adulteration, which are important issues for economic, religious or cultural reasons. Proof of provenance has become an important topic in the context of food safety, food quality and consumer protection in accordance with national legislation and international standards and guidelines.

DNA Methylation Protocols Ken I. Mills, Bernie H. Ramsahoye, 2008-02-05. DNA Methylation Protocols offer a set of readily reproducible protocols of the analysis of DNA methylation and methylases. These powerful methods provide the tools necessary for studying methylation at both the global level and the level of sequence and include many techniques for identifying genes that might be aberrantly methylated in cancer and aging. Additional methods cover genome wide analysis of abnormal DNA methylation and the isolation and measurement of demethylases and related proteins.

DNA Topoisomerase Protocols Neil Osheroff, Mary-Ann Bjornsti, 2008-02-05. Beginning with the Escherichia coli protein or bacterial DNA topoisomerase I, an ever increasing number of enzymes have been identified that catalyze changes in the linkage of DNA strands. DNA topoisomerases are ubiquitous in nature and have been shown to play critical roles in most processes involving DNA, including DNA replication, transcription and recombination. These enzymes further constitute the cellular targets of a number of clinically important antibacterial and anticancer agents. Thus further studies of DNA topology and DNA topoisomerases are critical to advance our understanding of the basic biological processes required for cell cycle progression, cell division, genomic stability and development. In addition, these studies will continue to provide critical insights into the cytotoxic action of drugs that target DNA topoisomerases. Such mechanistic studies have already played an important role in the development and clinical application of antimicrobial and chemotherapeutic agents. The two volumes of DNA Topoisomerase Protocols are designed to help new and established researchers investigate all aspects of DNA topology and the function of these enzymes. The chapters are written by prominent investigators in the field and provide detailed background information and step by step experimental protocols. The topics covered in Part I, DNA Topology and Enzymes, range from detailed methods to analyze various aspects of DNA structure from linking number, knotting, unknotting, site specific recombination and decatenation to the overexpression and purification of bacterial and eukaryotic DNA topoisomerases from a variety of cell systems and tissues.

Capillary Electrophoresis Of Nucleic Acids Methods In Molecular Biology Book Review: Unveiling the Magic of Language

In an electronic digital era where connections and knowledge reign supreme, the enchanting power of language has be much more apparent than ever. Its capability to stir emotions, provoke thought, and instigate transformation is actually remarkable. This extraordinary book, aptly titled "**Capillary Electrophoresis Of Nucleic Acids Methods In Molecular Biology**," published by a highly acclaimed author, immerses readers in a captivating exploration of the significance of language and its profound affect our existence. Throughout this critique, we will delve into the book is central themes, evaluate its unique writing style, and assess its overall influence on its readership.

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