

Adenovirus Methods And Protocols Volume 1 Adenoviruses Ad Vectors Quantitation And Animal Models Methods In Molecular Medicine

Comprehensive and authoritative, Protein Kinase C Protocols is a timely compilation of biophysical, biochemical, cell biological, and molecular biological approaches that brings protein kinase C research into any laboratory interested in studying it. It offers methods that can be easily used to explore the structure, function, regulation, subcellular localization, and macromolecular interactions of protein kinase C. Each protocol is introduced in the context of PKC function and regulation and contains many notes on how best to deal with the problems that may occur. Use readily reproducible methods to elucidate the biology of protein kinase C. Have the first comprehensive compilation of protocols for studying protein kinase C. Explore the secrets of signal transduction with classic and emerging scientific techniques.

Reflecting the development of powerful new tools and high-throughput methods to analyze adenoviral particles and their interactions with host cells, the third edition of Adenovirus Methods and Protocols calls upon experts in the field to convey advances in molecular biology, genomics and proteomics, imaging, and bioinformatics. Beginning with cryo-electron microscopy, atomic force microscopy, and mass spectrometry for a high resolution image and characterization of the virion, this detailed book then continues with capsid modifications and viral-like particles as promising alternatives to classical adenovirus vectors, and the study of adenovirus in host interactions in vitro at the cellular level as well as in vivo in animal models. Finally, the volume concludes with an extensive update of the most efficient protocols to generate, amplify, and/or purify, at small and large scale, standard human Ad5 as well as non-human, chimeric, and helper-dependent adenovirus vectors. Written in the greatly successful Methods in Molecular Biology series format, chapters include introductions to their respective topics, lists of the necessary materials and reagents, step-by-step, readily reproducible laboratory protocols, and tips on troubleshooting and avoiding known pitfalls. Comprehensive and cutting-edge, Adenovirus Methods and Protocols, Third Edition serves as an ideal guide for scientists continuing to research this highly valuable viral tool.

In this book internationally recognized investigators describe cutting-edge laboratory techniques for the study of Production and In Vivo Applications of Gene Transfer Vectors and Design and Characterization of Gene Transfer Vectors. Readers will find a comprehensive resource of current and emerging methods for the production of viral and non-viral gene transfer vectors, as well as detailed protocols for applications in stem cell biology, cancer research and infectious disease.

A group of experts from various disciplines share recent advances in tissue

engineering-related methodologies.

This detailed volume explores the most popular antigen production and delivery strategies that have been tested in veterinary species. Viral vectors as well as genetic and protein subunit vaccines or large scale protein production systems are considered as well as an updated view of most options available for vaccine development, including the data obtained through experimental trials which contributes to the exploration and understanding of the immune mechanisms and immune correlates relevant in protection among different animal species. Written for the highly successful Methods in Molecular Biology series, chapters include brief introductions to their respective topics, lists of the necessary materials and reagents, step-by-step, readily reproducible laboratory protocols and tips on troubleshooting and avoiding known pitfalls. Authoritative and practical, Vaccine Technologies for Veterinary Viral Diseases: Methods and Protocols facilitates access to well-established protocols to those beginning in this interesting and laborious field as well as providing important basic knowledge when attempting a novel vaccine design or platform.

Arthritis Research: Methods and Protocols is a compendium of data pertinent to the methods and protocols that have contributed to recent advances in molecular medicine in general, but to the molecular basis of rheumatic disease in particular. These volumes details novel technologies, some of which are still evolving and whose impacts are yet to be determined. Leaders in the field contribute to cover such exciting and cutting edge topics as imaging and immunohistochemistry, analysis of cartilage and bone catabolism, immunobiology, and cell trafficking. In Volume 1, authors discuss synovial joint morphology, histopathology, and immunohistochemistry, cartilage matrix and bone biology, and cell trafficking, migration and invasion. Volume 2 is broken up into sections that cover immunobiology and T cells, animal models of arthritis, and applications of new technologies, such as Differential Display Reverse Transcription-Polymerase Chain Reaction (DDRT-PCR), to define novel therapeutic targets. Both volumes combine to produce a concise set of protocols condensing decades of experience and expertise. Arthritis Research: Methods and Protocols will be a valuable tool for basic research investigators, clinician scientists, pathologists, immunologists, and biochemists looking to stay current in their fields.

The huge potential for gene therapy to cure a wide range of diseases has led to high expectations and a great increase in research efforts in this area, particularly in the study of delivery via viral vectors, widely considered to be more efficient than DNA transfection. In Viral Vectors for Gene Therapy: Methods and Protocols, experts in the field present a collection of their knowledge and experience featuring methodologies that involve virus production, transferring protocols, and evaluating the efficacy of gene products. While thoroughly covering the most popular viral vector systems of adenovirus, retrovirus, and adeno-associated virus, this detailed volume also explores less common viral vector systems such as baculovirus, herpes virus, and measles virus, the

growing interest in which is creating a considerable demand for large scale manufacturing and purification procedures. Written in the highly successful Methods in Molecular Biology™ series format, many chapters include introductions to their respective topics, lists of the necessary materials and reagents, step-by-step, readily reproducible laboratory protocols, and vital tips on troubleshooting and avoiding known pitfalls. Comprehensive and practical, *Viral Vectors for Gene Therapy: Methods and Protocols* provides basic principles accessible to scientists from a wide variety of backgrounds for the development of gene therapy viral products that are safe and effective.

This book applies modern molecular diagnostic techniques to the analysis of single cells, small numbers of cells, or cell extracts. Emphasis is placed on non-invasive analysis of single cell metabolites and the direct analysis of RNA and DNA from single cells, with a focus on polymerase chain reaction and fluorescence in situ hybridization. In particular, this handbook is essential for practitioners providing care for couples seeking treatment for infertility.

Research leaders in the PDE field describe new concepts and techniques for investigating the role of PDEs in orchestrating normal and pathophysiological responses. Presented in step-by-step detail, these readily reproducible methods allow the measurement of cyclic nucleotide variations in living cells, as well as their visualization in a spatio-temporal manner, the localization and characterization of their activities in tissues and living cells, and the assessment of targeted PDEs in creating specific tools and drugs.

Today, progress in rAAV-mediated gene transfer is so robust that long-term, efficient, and regulatable transgene expression is reproducibly achieved in large animal models. The complexity of gene transfer agents in the context of their clinical use requires investigators from a wide variety of backgrounds to have an understanding — or at least an appreciation of — the regulatory environment and constraints that affect vector design, manufacturing, pre-clinical testing, and clinical use, with an emphasis on patient protection. In *Adeno-Associated Virus: Methods and Protocols*, experts from the United States and Europe have contributed current knowledge of this multi-dimensional field relating to the biology of AAV, rAAV vector design, vector manufacturing and product testing, performance of rAAV vectors in major organs, rAAV-related immunological issues, design of animal and clinical studies, and clinical experience. Written in the successful Methods in Molecular Biology™ series format, chapters include introductions to their respective topics, lists of the necessary materials and reagents, step-by-step, readily reproducible protocols, and notes on troubleshooting and avoiding known pitfalls. Authoritative and accessible, *Adeno-Associated Virus: Methods and Protocols* provides a complete and comprehensive understanding of this multi-disciplinary and rapidly progressing field.

Adenovirus Methods and Protocols is designed to help new researchers to conduct studies involving adenoviruses and to help established researchers to branch into new areas.

Adenovirus Methods and Protocols, Volume II, focuses on methods that elucidate and quantitate the interactions of adenoviruses with the host. This volume provides methods for analysis of transcription, splicing, RNA interference, subcellular localization of proteins during infection, and cell cycle effects.

Hands-on laboratory experts describe for the novice investigator a host of novel technologies and molecular techniques specifically designed to study cellular immunology and promote its gene therapy applications. Presented in step-by-step detail to ensure ready reproducibility, these protocols range from flow cytometric techniques to detect cytokines and growth factors in

different specimens, to methods for generating and expanding dendritic cells and hematopoietic progenitors from different origins. Sectional.

In *Gene Therapy of Cancer: Methods and Protocols*, Wolfgang Walther and Ulrike Stein survey the rapidly evolving field cancer gene therapy and provide a broad array of leading-edge protocols for the delivery of therapeutic genes into tumors. Described in step-by-step fashion and enriched with each author's own practical tips, these readily reproducible methods are currently being widely applied in cancer gene therapy investigations, including immunotherapy and tumor vaccination, suicide gene therapy, antioncogene therapy, and antisense and ribozyme gene therapy. Representative strategies are provided for gene targeting and for viral or nonviral gene delivery in cancer therapy, as well as a significant number of clinical protocols for the development of novel cancer gene therapies. *Gene Therapy of Cancer: Methods and Protocols* offers basic and clinical researchers a broad ranging overview and collection of the most recent advances in gene transfer techniques. Written by leading international authorities, its readily reproducible, cutting-edge methods constitute today's most valuable tools for the study of cancer gene therapy in both the laboratory and clinical trials.

The yeast two-hybrid system is one of the most widely used and productive techniques available for investigating the macromolecular interactions that affect virtually all biological processes. In *Two-Hybrid Systems: Methods and Protocols*, Paul N. MacDonald has assembled a collection of these powerful molecular tools for examining and characterizing protein-protein, protein-DNA, and protein-RNA interactions. The techniques range from the most basic (introducing plasmids into yeasts, interaction assays, and recovering the plasmids from yeast) to the most advanced alternative strategies (involving one-hybrid, split two-hybrid, three-hybrid, membrane recruitment systems, and mammalian systems). Methods are also provided for dealing with the well-known problems of artifacts and false positives and for identifying the interacting partners in important biological systems, including the Smad and nuclear receptor pathways. To ensure ready reproducibility and robust results, each technique is described in step-by-step detail by researchers who employ it regularly. Comprehensive and highly practical, *Two-Hybrid Systems: Methods and Protocols* not only reveals how the great variety of plasmid vectors and approaches may be optimally deployed, but also quickly empowers novices to establish two-hybrid systems in their laboratories, and experienced researchers to expand their repertoire of techniques.

Adenovirus Methods and Protocols
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The huge potential for gene therapy to cure a wide range of diseases has led to high expectations and a great increase in research efforts in this area, particularly in the study of delivery via viral vectors, widely considered to be more efficient than DNA transfection. In *Viral Vectors for Gene Therapy: Methods and Protocols*, experts in the field present a collection of their knowledge and experience featuring methodologies that involve virus production, transferring protocols, and evaluating the efficacy of gene products. While thoroughly covering the most popular viral vector systems of adenovirus, retrovirus, and adeno-associated virus, this detailed volume also explores less common viral vector systems such as baculovirus, herpes virus, and measles virus, the growing interest in which is creating a considerable demand for large scale manufacturing and purification procedures. Written in the highly successful *Methods in Molecular Biology* series format, many chapters include introductions to their respective topics, lists of the necessary materials and reagents, step-by-step, readily reproducible laboratory protocols, and vital tips on troubleshooting and avoiding known pitfalls. Comprehensive and practical, *Viral Vectors for Gene Therapy: Methods and Protocols* provides basic principles accessible to scientists from a wide variety of backgrounds for the development of gene therapy viral products that are safe and effective.

In *Gene Therapy Protocols*, leading researchers describe in detail all the essential molecular

methods for developing gene transfer systems, along with the methods for introducing genes into specific tissue types either in vivo or ex vivo. These easily reproducible methods range from those for specific viral and nonviral delivery systems, to those concerned with gene delivery to particular tissues. Methods for applying specific therapeutic systems, such as ribozymes and tumor suppressor genes for the treatment of AIDS and cancer, are also included in this authoritative collection. Gene Therapy Protocols is the first major collection of the methods needed for successful gene delivery and subsequent in vivo gene expression, techniques at the center of the many and significant recent advances in the treatment of both genetic and acquired diseases. It will surely become today's indispensable standard reference source for all scientists working to realize the promises of gene therapy.

The two volumes of Cardiovascular Disease: Methods and Protocols provide comprehensive coverage of both basic and advanced approaches to the study and characterization of cardiovascular disease. In Volume 1: Genetics and Volume 2: Molecular Medicine, highly experienced cardiovascular researchers describe in detail the most important techniques in molecular medicine that are employed in genetic, molecular, cellular, structural, and physiological studies of cardiovascular disease.

Microtubules are essential components of the cytoskeleton, and play critical roles in a variety of cell processes, including cell shaping, intracellular tracking, cell division, and cell migration. Microtubule Protocols presents a comprehensive collection of essential and up-to-date methods for studying both the biology of microtubules and the mechanisms of action of microtubule-interacting drugs. The straightforward presentation of readily reproducible protocols is a hallmark of the Methods in Molecular Medicine™ series, and is evident in this volume. Methods presented range from the purification and characterization of microtubule proteins, analysis of post-translational modifications of tubulin, and determination of microtubule structure, to the visualization of microtubule and spindle behavior, measurement of microtubule dynamics, and examination of microtubule-mediated cellular processes. Both basic scientists and clinical researchers will benefit from this collection of state-of-the-art protocols for microtubule research.

sCongenital heart disease is the leading cause of infant death and affects approximately one in every 100 babies born in the United States. The study of cardiovascular development has acquired new momentum in last twenty years due to the advancement of modern molecular biology and new available equipments and techniques. In Cardiovascular Development: Methods and Protocols expert researchers in the field in the field detail many of the methods which are now commonly used in the field of cardiovascular development research. These include methods and technique for using different organisms for cardiovascular developmental research, using cell and molecular biology methods to study cardiovascular development, as well as other available techniques for cardiovascular development research. Written in the highly successful Methods in Molecular Biology™ series format, chapters include introductions to their respective topics, lists of the necessary materials and reagents, step-by-step, readily reproducible laboratory protocols, and key tips on troubleshooting and avoiding known pitfalls. Authoritative and practical, Cardiovascular Development: Methods and Protocols seeks to aid scientists in understanding new state-of-the-art techniques in the field of cardiovascular development research including in vivo imaging and Bioinformatics.

Over the past decades, the pathogenesis, diagnosis, treatment and prevention of cardiovascular diseases have been benefited significantly from intensive research activities. In order to provide a comprehensive "manual" in a field that has become as broad and deep as cardiovascular medicine, this volume of "Methods in Molecular Medicine" covers a wide spectrum of in vivo and in vitro techniques encompassing biochemical, pharmacological and molecular biology disciplines which are currently used to assess vascular disease progression. Each chapter included in this volume focuses on a specific vascular biology technique and

describes various applications as well as caveats of these techniques. The protocols included here are described in detail, allowing beginners with little experience in the field of vascular biology to embark on new research projects.

Carrying on the high standards of the much-praised first edition of Nitric Oxide Protocols, Aviv Hassid has brought together a panel of expert researchers and clinician scientists to describe in step-by-step detail the latest methodologies for the measurement of nitric oxide--and the enzyme that produces it--in biological tissues and fluids. The authors take advantage of the latest methodologies for the quantitation of biological fluids and tissues, including capillary electrophoresis, microcoaxial electrodes, in vivo measurement of nitric oxide in exhaled air, confocal microscopy, gas chromatography, in situ hybridization, and real-time polymerase chain reaction. Chapters on the measurement of the novel products of nitric oxide, such as nitrated proteins, S-nitrosylated proteins, and dioxygen-dependent NO metabolism, are also included. Additional chapters address the expression of nitric oxide synthase via the use of viral vectors in gene therapy for erectile dysfunction and cancer, as well as in retrovirus, adenovirus, or adenoassociated virus-mediated expression of nitric oxide synthase in vivo. The protocols follow the successful Methods in Molecular Biology™ series format, each one offering step-by-step laboratory instructions, an introduction outlining the principle behind the technique, lists of equipment and reagents, and tips on troubleshooting and avoiding known pitfalls. State-of-the-art and highly practical, Nitric Oxide Protocols, 2nd ed., offers investigators and clinician/scientists a gold-standard collection of readily reproducible analytical techniques for measuring levels of nitric oxide and determining its manifold functions and effects.

Over the last ten years, Green Fluorescent Proteins, along with the other spectral variants, have emerged from near obscurity to become a powerful and versatile tool in scientific research. In Viral Applications of Green Fluorescent Protein: Methods and Protocols, leading investigators from around the world contribute detailed examples of both the construction and application of fluorescent proteins delivered by viruses in a format crafted to produce rapid, readily reproducible results. Written in the style of the popular and successful Methods in Molecular Biology™ series, the chapters include brief introductions to the topics, lists of the necessary materials and reagents, step-by-step laboratory protocols, and Notes sections, which highlight tips on troubleshooting and avoiding known pitfalls. Cutting-edge and easy to use, Viral Applications of Green Fluorescent Protein: Methods and Protocols supplies researchers with an ideal guide to the many uses of GFP and a vital starting point for future studies utilizing this highly adaptable protein.

This volume provides readers with methods and protocols for understanding the development of recombinant viruses and their use as vaccines platforms. Recombinant Virus Vaccines: Methods and Protocols details the use of recombinant vaccines that are employed to either produce immunogens in vitro or elicit antibody production in vivo. The chapters in this book are divided into four parts: Part I explores double-stranded DNA viruses; Part II discusses negative sense single-stranded RNA viruses; Part III talks about positive sense single-stranded RNA viruses; and Part IV describes bacteriophages. Written in the highly successful Methods in Molecular Biology series format, chapters include introductions to their respective topics, lists of the necessary materials and reagents, step-by-step, readily reproducible laboratory protocols, and tips on troubleshooting and avoiding known pitfalls. Thorough and cutting-edge, Recombinant Virus Vaccines: Methods and Protocols is a valuable resource for scientists and clinicians who are interested in learning about and adopting methods for use in basic and biomedical research directed toward generating and developing recombinant viral vaccines.

Adenoviral Vectors for Gene Therapy, Second Edition provides detailed, comprehensive coverage of the gene delivery vehicles that are based on the adenovirus that is emerging as an important tool in gene therapy. These exciting new therapeutic agents have great potential for the treatment of disease, making gene

therapy a fast-growing field for research. This book presents topics ranging from the basic biology of adenoviruses, through the construction and purification of adenoviral vectors, cutting-edge vectorology, and the use of adenoviral vectors in preclinical animal models, with final consideration of the regulatory issues surrounding human clinical gene therapy trials. This broad scope of information provides a solid overview of the field, allowing the reader to gain a complete understanding of the development and use of adenoviral vectors. Provides complete coverage of the basic biology of adenoviruses, as well as their construction, propagation, and purification of adenoviral vectors Introduces common strategies for the development of adenoviral vectors, along with cutting-edge methods for their improvement Demonstrates noninvasive imaging of adenovirus-mediated gene transfer Discusses utility of adenoviral vectors in animal disease models Considers Federal Drug Administration regulations for human clinical trials

The second edition of this book constitutes a comprehensive manual of new techniques for setting up mammalian cell lines for production of biopharmaceuticals, and for optimizing critical parameters for cell culture considering the whole cascade from lab to final production. The chapters are written by world-renowned experts and the volume's five parts reflect the processes required for different stages of production. This book is a compendium of techniques for scientists in both industrial and research laboratories that use mammalian cells for biotechnology purposes.

Neuroprotection is a topic of great importance in current neuroscience, both basic and clinical. The incidence of age-related neurodegenerative diseases could be expected to rise dramatically in the future owing to an aging population. Consequently, finding the means of retarding or preventing the progression of such diseases becomes increasingly important. This book focuses on basic perspective on neuroprotective approaches and scientists well recognized for their work have contributed chapters to this volume. Although findings on neuroprotection in the different pathologies become more and more frequent and detailed, it can be difficult for researchers to orient themselves in such a complicate field. For this reason, this book describes basic science discovery and the application of such research within different laboratories leading to the development of neuroprotective protocols. The main aim of this volume is thus to give an overview of methods used to study neuronal death and neuroprotection and to offer a really comprehensive step-by-step method in order to make clear not just the procedure but also the principles behind the use of it. At this purpose, the "Notes" section of each chapter represents a useful tool to solve technical problems and to help in reproducing the described methods.

In Gene Therapy Protocols, Volumes 1 and 2, internationally recognized investigators describe cutting-edge laboratory techniques for the study of Production and In Vivo Applications of Gene Transfer Vectors (Volume 1) and Design and Characterization of Gene Transfer Vectors (Volume 2). In this second volume, readers will find a comprehensive resource of current and emerging methods for the processing and characterization of viral and non-viral gene transfer vectors.

This volume discusses protocols, ranging from vector production to delivery methods, used to execute gene therapy applications. Chapters are divided into four parts, and cover topics such as design, construction, and application of transcription activation-like effectors; multi-modal production of adeno-associated virus; construction of oncolytic

herpes simplex virus; AAV-mediated gene delivery to the mouse liver; and intrathecal delivery of gene therapeutics by direct lumbar puncture in mice. Written in the highly successful Methods in Molecular Biology series format, chapters include introductions to their respective topics, lists of the necessary materials and reagents, step-by-step, readily reproducible laboratory protocols, and tips on troubleshooting and avoiding known pitfalls. Comprehensive and authoritative, *Viral Vectors for Gene Therapy: Methods and Protocols* is a valuable resource for researchers, clinicians, and students looking to utilize viral vectors in gene therapy experiments.

Studies of membrane transporters have had great impact on our understanding human diseases and the design of effective drugs. About 30% of current clinically marketed drugs are targeting membrane transporters or channels. *Membrane Transporters: Methods and Protocols* provides various practical methodologies for the ongoing research on membrane transporters. To provide readers the most up-to-date information, several emerging fields and methodologies are embraced in this book, including pharmacogenomics, bioinformatics, and microarray technology.

Pharmacogenomics studies of membrane transporters are useful in drug discovery and in predicting drug responses in the clinic. In this volume, the current status of pharmacogenomics studies of transporters is reviewed and research methodologies in this field are described. Transporter classification is important in studying the structure and function of membrane transporters and has thus triggered intensive interest in recent years. *Membrane Transporters: Methods and Protocols* provides a systematic classification of all transmembrane transport proteins found in living organisms on Earth. This classification system will be helpful for further studies on various aspects of membrane transporters, especially for such large-scale gene expression studies as those employing microarray technologies. Bioinformatics is frequently used in transporter studies and has become indispensable for all kinds of research methods. Commonly used bioinformatics methods, such as databases and tools for sequence analysis and motif studies, are explained in order to facilitate membrane transporters research. Because of heterogeneous sources and tremendous amounts of data, data integration has become one of the most important issues in transporter studies.

With the ever-increasing volume of information in clinical medicine, researchers and health professionals need computer-based storage, processing and dissemination. In this book, leading experts in the field provide a series of articles focusing on software applications used to translate information into outcomes of clinical relevance. This book is the perfect guide for researchers and clinical scientists working in this emerging "omics" era.

Presents a comprehensive collection of DNA vaccine protocols. Divided into five sections, this volume contains state-of-the-art and practical procedures on the latest DNA vaccine technology, and demonstrates the tremendous progress that has been made in the field of DNA vaccination since the initial appearance of this new vaccination strategy.

This book examines specific techniques which can be used to explore new drug targets and the effectiveness of new antibiotics. By testing new antimicrobial agents and modified existing drugs, the most vulnerable cell processes, such as cell wall and membrane synthesis, DNA replication, RNA transcription and protein synthesis, can be better exploited. This in-depth volume, however, delves

even deeper by identifying additional novel cellular targets for these new therapies. The book will provide laboratory investigators with the vital tools they need to test the antimicrobial potential of products and to curb the rise of so many infectious diseases.

Public Health Microbiology is a collection of readily reproducible laboratory methods for the determination of various pathogenic microorganisms, their effects, and possible measures that can be taken to counter them.

A collection of readily reproducible methods for working with mice, and particularly for generating mouse models that will enable you to better understand gene function. Described in step-by-step detail by highly experienced investigators, these proven techniques include new methods for conditional, induced knockout, and transgenic mice, as well as for working with mice in such important research areas as immunology, cancer, and atherosclerosis. Such alternative strategies as random mutagenesis and viral gene transduction for studying gene function in the mouse are also presented. Use effective methods for conditional and inducible gene expression Review mouse models for a wide range of genetic aberrations associated with human disease.

Adenovirus Methods and Protocols, Second Edition, now in two volumes, is an essential resource for adenovirus (Ad) researchers beginning in the field, and an inspirational starting point for researchers looking to branch into new areas of Ad study. In addition to updating and expanding the first edition, the authors have added new chapters that address innovative areas of emphasis in Ad research, including Ad vector construction and use, real-time PCR, use of new animal models, and methods for quantification of Ad virus or virus expression/interactions. Each of the protocols presented in these volumes is written by trendsetting researchers.

Molecular Methods: Stem Cell Transplantation presents a compendium of cutting-edge research on the molecular steps involved in hematopoietic stem cell (HSC) activation and self-renewal. The emergence of HLA typing, and the positive impact it has had on the success of clinical transplantation is emphasized and discussed by notable stem cell researchers.

This text provides a practical guide providing step-by-step protocol to design and develop vaccines. Chapters detail protocols for developing novel vaccines against infectious bacteria, viruses, fungi, and parasites for humans and animals.

Volume 2: Vaccines for Veterinary Diseases includes vaccines for farm animals and fishes, vaccine vectors and production, vaccine delivery systems, vaccine bioinformatics, vaccine regulation and intellectual property. Written for the Methods in Molecular Biology series, chapters include introductions to their respective topics, lists of the necessary materials and reagents, step-by-step, readily reproducible laboratory protocols, and tips on troubleshooting and avoiding known pitfalls. Authoritative and practical, Vaccine Design: Methods and Protocols, Volume 2: Vaccines for Veterinary Diseases aims to ensure successful results in the further study of this vital field.

