

Gene Therapy For Autoimmune And Inflammatory Diseases Milestones In Drug Therapy

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Monoclonal Antibodies Thomas F. Kresina 2020-08-27 Presents a sampling of new and novel approaches to the amelioration of musculoskeletal disease pathology, emphasizing prevention and therapy. Where applicable, these new technologies are focused on their application to human autoimmune diseases, but the volume mainly discusses and details the use of Immunogenetics of Autoimmune Disease Jorge R. Oksenberg 2007-12-22 Autoimmunity is the downstream outcome of a rather extensive and coordinated series of events that include loss of self-tolerance, peripheral lymphocyte activation, disruption of the blood-systems barriers, cellular infiltration into the target organs and local inflammation. Cytokines, adhesion molecules, growth factors, antibodies, and other molecules induce and regulate critical cell functions that perpetuate inflammation, leading to tissue injury and clinical phenotype. The nature and intensity of this response as well as the physiological ability to restore homeostasis are to a large extent conditioned by the unique amino acid sequences that define allelic variants on each of the numerous participating molecules. Therefore, the coding genes in their germline configuration play a primary role in determining who is at risk for developing such disorders, how the disease progresses, and how someone responds to therapy. Although genetic components in these diseases are clearly present, the lack of obvious and homogeneous modes of transmission has slowed progress by preventing the full exploitation of classical genetic epidemiologic techniques. Furthermore, autoimmune diseases are characterized by modest disease risk heritability and multifaceted interactions with environmental influences. Yet, several recent discoveries have dramatically changed our ability to examine genetic variation as it relates to human disease. In addition to the development of large-scale laboratory methods and tools to efficiently recognize and catalog DNA diversity, over the past few years there has been real progress in the application of new analytical and data-management approaches.

Mosaic of Autoimmunity Carlo Perricone 2019-02-15 The Mosaic of Autoimmunity: The Novel Factors of Autoimmune Diseases describes the

multifactorial origin and diversity of expression of autoimmune diseases in humans. The term implies that different combinations of factors in autoimmunity produce varying and unique clinical pictures in a wide spectrum of autoimmune diseases. Most of the factors involved in autoimmunity can be categorized into four groups: genetic, immune defects, hormonal and environmental factors. In this book, the environmental factors are reviewed, including infectious agents, vaccines as triggers of autoimmunity, smoking and its relationship with rheumatoid arthritis, systemic lupus erythematosus, thyroid disease, multiple sclerosis and inflammatory bowel diseases. An entirely new syndrome, the autoimmune/inflammatory syndrome induced by adjuvants (ASIA), is also included, along with other diseases that are now recognized as having an autoimmune etiopathogenesis. Highlights the concept of the mosaic of autoimmune manifestations Includes new visions on unsuspected molecules Provides updated knowledge to physicians helping patients with autoimmune diseases Presents thorough, up-to-date information on specific diseases, along with clinical applications

Stem Cell Therapy for Autoimmune Disease Richard K. Burt 2019-11-11 Stem cell transplantation may be complicated by treatment-related mortality and like the immune system that it regenerates has equal potential to either create and preserve or destroy. The dual nature that defines stem cells is differentiation that ultimately leads to death and self-renewal, which leads to immortality. What types of stem cells are there? How are they collected? What are their attributes and characteristics? This textbook devotes many chapters to familiarize the reader with the basic science, clinical aspects, and new questions being raised in the field of stem cell biology. Blood stem cells for tolerance and tissue regeneration are a rapidly developing research and clinical field that is being applied to autoimmune diseases. In clinical trials, autologous hematopoietic (blood) stem cells are being used to reduce the cytopenic interval following intense immune suppressive transplant regimens. While as yet not delineated, some possible mechanisms and pathways leading to tolerance after hematopoietic stem cell transplantation are suggested in these chapters. Tissue regeneration from blood stem cells is also suggested by animal experiments on stem cell plasticity or metamorphosis (i.e., change in fate) as described within this textbook. Ongoing early clinical trials on tissue regeneration from blood stem cells are described in the chapter on stem cell therapy for cardiac and peripheral vascular disease. Whether autologous hematopoietic stem cells, through the process of mobilization and reinfusion, may be manipulated to contribute to tissue repair in autoimmune diseases is a future area for translational research.

New Concepts in Pathology and Treatment of Autoimmune Disorders C. Pozzilli 2013-06-29 Autoimmunity, characterized by autoreactive lymphocytes and autoantibodies, is the consequence of a failure to discriminate between self and non-self, and autoimmune diseases are an increasing threat to people living in the industrialized countries. Autoimmune disorders are treatable, but not curable, and patients can face disability at later stages of the disease. Thus, there is a medical and economic need for new concepts and treatments in autoimmune disorders. New concepts and treatments can only be achieved by an interdisciplinary approach bringing together expertise, technologies, and clinical experience. The workshop focused on multiple sclerosis, rheumatoid arthritis and type I diabetes, and discussed conventional drug therapies, gene therapy, cell and tissue transplantation therapies, and first treatments using blood stem cells for reprogramming the patients' immune system.

Gene Therapy of Autoimmune Disease Gerald J. Prud'homme 2005-07-13 Autoimmune diseases are diverse and responsible for considerable morbidity. Their etiology remains largely unknown, and current therapy with anti-inflammatory drugs is prone to adverse effects, and rarely curative. New therapies with anti-cytokine antibodies or receptors are promising, but require frequent administration of expensive protein drugs. Gene Therapy of Autoimmune Diseases comprehensively reviews research in gene therapy for autoimmune diseases with viral or non-viral

vectors. Gene therapy offers the possibility of long-term, continuous delivery of a wide variety of immunosuppressive, anti-inflammatory, or tolerance-inducing agents. Moreover, highly specific genetically modified cells can be produced. This book discusses the most promising avenues in this exciting new field.

The Autoimmune Brain David S. Younger 2019-11-10 There are millions of people who experience issues related to brain health--depression, attention issues, anxiety, forgetfulness, fatigue, and even chronic pain--yet can't figure out what's causing their problems and can't find any relief. They may have seen a myriad of doctors, many of whom do not take their complaints seriously, or worse, turn to the easy, often inappropriate fix of antidepressants or anti-anxiety medications. Traditional medications, supplements, or other therapies haven't worked. No matter what their age--from children to teens or seniors--people and their loved ones are frustrated, scared, and confused by their continued poor health. Countless others display severe psychiatric symptoms that seem to come out of nowhere, ranging from tics, obsessive-compulsive behaviors and anxiety, to depression, bipolar-like mood swings, and even borderline personality disorder and suicidal ideas. . Sometimes, the people affected are the only ones that notices a change to the way they think or feel, and they suffer in silence. Or, they reach out to get help, and are all too frequently misdiagnosed. Now, Dr. David Younger, a world-renowned physician, provides relief to these patients and their families. His diagnostic techniques and treatment protocols will help readers identify the true cause of their symptoms and put them on a clear path to healing so they no longer feel unbalanced, out of control, forgetful, and exhausted. **THE AUTOIMMUNE BRAIN** connects common brain health symptoms to the changes in the immune system, and particularly bacterial, viral, and parasitic infections. In this book, Dr. Younger explains his groundbreaking research and adds a new component: how traumatic stress (whether physical or emotional) and genetics affects this same triad as inextricable factors in initiating disease and brain health symptoms. In fact, a change in personality, behavior, coping style, and one's emotional state may be the first clue that there is a health problem brewing somewhere else in the body. Readers will find new answers to troubling conditions, including: Alzheimer's disease Anxiety Arthritis Autism Autonomic disturbances Bacterial and viral infections Bipolar Disorder Cancer Celiac disease and gluten intolerances Chronic Fatigue Syndrome (now referred to as Systemic Exertion Intolerance Disease) Chronic Pain Dementia Depression Endocrine Disorders Immune modulatory therapy using IVIg Lyme disease and co-infections Mast cell activation syndrome Medical cannabis Obsessive Compulsive Disorder Orthostatic hypotension Peripheral Neuropathy Porphyrin Post-Traumatic Stress Disorder Postural orthostatic tachycardia

Novel Therapeutic Agents for the Treatment of Autoimmune Diseases Vibeke Strand 1996-09-19 Provides a detailed survey of therapies for autoimmune diseases, exploring the rationale for their use and clinical data regarding their potential benefit.

Innovative Medicine Kazuo Nakao 2015-10-13 This book is devoted to innovative medicine, comprising the proceedings of the Uehara Memorial Foundation Symposium 2014. It remains extremely rare for the findings of basic research to be developed into clinical applications, and it takes a long time for the process to be achieved. The task of advancing the development of basic research into clinical reality lies with translational science, yet the field seems to struggle to find a way to move forward. To create innovative medical technology, many steps need to be taken: development and analysis of optimal animal models of human diseases, elucidation of genomic and epidemiological data, and establishment of "proof of concept". There is also considerable demand for progress in drug research, new surgical procedures, and new clinical devices and equipment. While the original research target may be rare diseases, it is also important to apply those findings more broadly to common diseases. The book covers a wide range of topics and is organized into three complementary parts. The first part is basic research for innovative medicine, the second is translational research for innovative medicine, and the third is new technology for innovative medicine.

This book helps to understand innovative medicine and to make progress in its realization.

Monoclonal Antibodies Kresina 1991-03-29 Presents a sampling of new and novel approaches to the amelioration of musculoskeletal disease pathology, emphasizing prevention and therapy. Where applicable, these new technologies are focused on their application to human autoimmune diseases, but the volume mainly discusses and details the use of

Genetics of Autoimmunity Gregory R. Bock 2005-05-27 This title provides an extremely helpful analysis of genes that may be associated with autoimmunity, and answers questions such as how these genes can be identified, and how the functions of the gene products can be elucidated. Incorporating data on disease-associated chromosomal loci that has been accumulated from inbred mice, the title: describes how some susceptibility loci may be common to many diseases, whereas others are relatively disease specific discusses the importance of developing criteria for establishing the significance of these different categories of disease-associated loci.

The Heart in Rheumatic, Autoimmune and Inflammatory Diseases Udi Nussinovitch 2017-02-10 The prevalence of autoimmune diseases and rheumatic conditions is constantly increasing. Autoimmune diseases affect approximately 7-10% of the population of the United States, while more than 50,000,000 American adults suffer from some type of arthritis. The Heart in Rheumatic, Autoimmune and Inflammatory Diseases examines the complex mechanisms relating to cardiac diseases from a pathophysiological and clinical point of view. Autoimmune rheumatic diseases can affect the coronary vessels, myocardium, pericardium, heart valves and the conduction system. The diagnosis of these unique cardiac complications necessitates medical awareness and a high index of suspicion. Increased risk of advanced atherosclerosis plays a pivotal role in the development of cardiac diseases in systemic, rheumatic and autoimmune illnesses. Yet, other complex immune mediated mechanisms may contribute to the pathogenesis. Patients' optimal care requires coordination between the primary caregiver, the rheumatologist, immunologist and cardiologist. Screening for cardiovascular risk factors, recognition of high-risk patients and identification of subclinical cardiac conditions are of great importance. Moreover, regulation of inflammation, as well as abnormal immune responses and the initiation of early treatments should be the focus of patient management. A continuous attempt to identify novel therapeutic targets and change the natural history of the underlying disease and its cardiac manifestations is in progress. The book aims at providing the readers with a state of the art collection of up to date information regarding clinically important topics based on experts' perspectives. This book was a result of an extended coordinated collaboration of one-hundred and fifty-four distinguished scientists from thirty-one countries around the globe. A review of common, as well as unusual (yet clinically significant) medical cardiac complications of prevalent rheumatic, autoimmune and inflammatory diseases. Focuses on aspects of pathophysiological processes, clinical presentations, screening tests, prognostic implications and novel therapeutic approaches. Presents an up-to-date "level of evidence and "strengths of recommendations for suggested therapies and reviews all randomized clinical trials, meta-analyses and other supporting published clinical findings.

Therapeutic Immunosuppression A.W. Thomson 2012-12-06 Therapeutic immunosuppression has very broad applications in clinical medicine, ranging from prevention and treatment of organ and bone marrow transplant rejection, management of various autoimmune disorders (e.g., rheumatoid arthritis), skin disease, and asthma. Whereas traditionally only a small repertoire of immunosuppressive agents was available for clinical use, recent discoveries have significantly increased the number of approved agents, resulting in numerous trials to further evaluate their potential. In addition, products of the biotechnology industry - monoclonal antibodies, cytokines, cytokine antagonists, and other products of genetic engineering that target key molecular pathways in disease pathogenesis - have either already made, or are on the verge of making an important impact on treatment. There is also considerable interest in the potential of cell-based therapies (particularly hematopoietic stem and

dendritic cell therapy) of allo- and autoimmunity. Important recent advances in the immunotherapy of allergic diseases are also covered in this book. Gene therapy offers considerable promise for suppressing pathogenic processes in either transplantation or autoimmune disorders. The possibility of combining these important new advances to maximize benefit to the patient, and to minimize possible untoward effects (which are also given extensive coverage in this book), is one of the most exciting challenges of contemporary medicine. This volume is intended both for practising physicians and surgeons and for biomedical scientists at the graduate/postdoctoral levels, and is designed to provide the theory behind these various approaches to immunosuppression, and to provide state-of-the-art reviews of current developments in each area. Each chapter is contributed by one or more experts in the field. There was a need to bring this information together in a single volume, as much of the key recent developments have been dispersed throughout the biomedical literature, largely in specialized journals. Since, as in the past, important developments in immunosuppressive therapy in one branch of medicine (i.e. transplantation) are likely to benefit another (e.g., dermatology, rheumatology, gastroenterology), cross-disciplinary coverage of the mechanistic basis of the various therapeutic strategies in a single volume is likely to convey the potential of advances in therapy in the most coherent manner possible.

Emerging Therapeutics for Immune Tolerance Hyewon Phee 2021-11-30

Conquering Rheumatoid Arthritis Thomas F. Lee . . . A splendid book. Literate and endlessly interesting. It is perhaps the best detailed explanation of rheumatoid arthritis [RA] and its treatment in existence. I highly recommend it to patients with this illness who really want to know more about RA. And it is not only for patients: nurses, physical and occupational therapists, and many physicians could read this book with much profit. Highly recommended.--Frederick Wolfe, M.D., Director, National Data Bank for Rheumatic Diseases, Arthritis Research Center Foundation As a biologist with more than thirty years of experience teaching a wide range of complex biomedical subjects and a person who suffers from rheumatoid arthritis (RA) himself, Dr. Thomas F. Lee is ideally suited to write a book that addresses the vital questions about the nature of the disease and the rationale behind its treatment. This is the only book that explains in layperson's terms the newest available therapies and the latest advances in our understanding of this often debilitating disease. These new insights have led to many molecular-based approaches already in clinical trial, and many more are waiting in the wings. All of these exciting developments are the result of the ongoing biotechnological revolution and a new understanding of the immune system aided by genetic research. Over two million people in this country suffer from rheumatoid arthritis (RA), a debilitating autoimmune disease that ravages the delicate lining of the joints. As in other autoimmune diseases, instead of defending against foreign invaders, the immune system inexplicably attacks healthy tissue. RA causes systemic effects as well; not only are joints painful, through the destruction of bone and cartilage, but there is often accompanying fatigue, decreased appetite, depression, and muscle pain. Dr. Lee not only supplies you with the latest facts on the discoveries about the disease, but he also provides numerous Web sites so that readers can follow this important story as it unfolds. Thomas F. Lee (Goffstown, NH) is professor of microbiology and biotechnology at St. Anselm College and the author of the critically acclaimed *The Human Genome Project: Cracking the Genetic Code of Life and Gene Future: The Promise and Perils of the New Biology*.

Cytokine Gene Therapy of Autoimmune Disease 1998

Handbook Of Immunological Properties Of Engineered Nanomaterials (Second Edition) (In 3 Volumes) Dobrovolskaia Marina A 2016-01-28

This unique book provides comprehensive overview of the field of immunology related to engineered nanomaterials used for biomedical applications. It contains literature review, case studies and protocols. The book can serve as a source of information about nanoimmunotoxicology for both junior scientists and experts in the field. The authors have more than 10 years of experience with preclinical

characterization of engineered nanomaterials used for medical applications, and they share their experience with the readers. In addition, the international team of experts in the field provides the opinion and share the expertise on individual topics related to nanoparticle physicochemical characterization, hematocompatibility, and effects on the immune cell function. The second edition contains updated chapters from the first edition plus new chapters covering areas of tumor immunology, nanoparticle interaction with lymphatic system, mathematical modeling of protein corona, utilization of nanoparticles for the delivery of antiviral drugs, extensive analysis of nanoparticle anti-inflammatory and immunosuppressive properties, novel ways of protecting therapeutic nanoparticles from the immune recognition, as well as case studies regarding nanoparticle sterilization, complement activation, protein binding and immunotherapy of cancer. The second edition comes in 3 volumes. Volume 1 is focused on nanoparticle characterization, sterility and sterilization, pyrogen contamination and depyrogenation. It also contains overview of regulatory guidelines, protocols for in vitro and in vivo immunotoxicity studies, and correlation between in vitro and in vivo immunoassays. Volume 2 is focused on hematocompatibility of nanomaterials. It provides comprehensive review and protocols for investigating nanoparticle interaction with erythrocytes, platelets, endothelial cells, plasma coagulation factors and plasma proteins forming so called 'corona' around nanoparticles. Volume 3 is dedicated to nanoparticle interaction with and effects on the immune cell function. It also contains examples of nanoparticle use for delivery of antiviral and anti-inflammatory drugs.

Modern Therapeutics in Rheumatic Diseases George C. Tsokos 2001-11-08 Leading clinicians and clinical researchers discuss in practical detail the newest treatments used in rheumatic diseases, emphasizing-without neglecting current standard treatments-those experimental therapies now undergoing clinical trials and poised for early introduction into the rheumatology armamentarium. The diseases and therapeutic regimes examined here range from rheumatoid arthritis and its treatment by gene therapy, to osteoarthritis and systemic autoimmune diseases. Each chapter is organized so that the busy clinician can quickly obtain all the information needed optimal patient treatment. This includes an analysis of the pathogenic mechanisms that explain the molecular basis of the newer therapeutics, reviews of animal data and the results of clinical trials, and recommendations concerning use, side effects, and precautions.

Biologic and Gene Therapy of Autoimmune Disease C. Garrison Fathman 2000-01-01 The clinical management of autoimmune diseases has proven to be extremely difficult. Current therapies focus on trying to alleviate symptoms, but fail to correct the fundamental immune defects that lead to pathology. To achieve this goal, it is necessary to understand much of the biology of antigen presentation, lymphocyte activation and the effects of cytokines. The articles in this book provide an up-to-date review of current innovative therapies using both biologic and gene therapy for the treatment of selected autoimmune diseases. Therapeutic approaches discussed include oral tolerance, the use of anti-CD4 monoclonal antibodies, IL-10 and anti-TNF α antibodies, DNA vaccination, and gene therapy applied to organ-specific autoimmune disease. Although some of these techniques are still in their infancy, their potential efficacy has been demonstrated in several animal models of autoimmune disease, holding great promise for the future development of treatments. Written by recognized experts in the field, the chapters in this book illustrate the concept of technology transfer from bench to bedside and provide a valuable update for clinicians and scientists in clinical immunology.

Metagenomics of the Human Body Karen E. Nelson 2010-11-16 The book brings a completely different perspective than available books by combining the information gained from the human genome with that derived from parallel metagenomic studies, and new results from investigating the effects of these microbes on the host immune system. Although there are a number of books that focus on the human genome that are currently available, there are no books that bring to the forefront the mix of the human genome and the genomes and metagenomes of

the microbial species that live within and on us.

Next-Generation Therapies and Technologies for Immune-Mediated Inflammatory Diseases Paola Mina-Osorio 2017-01-21 As our understanding of immune mediated chronic inflammatory diseases (IMIDs) grows, it becomes more and more clear that these conditions result from the convergence of a multitude of pathogenic mechanisms whose relative individual contribution is different in different patient subsets. Promising new technologies have been conceived that address the hypotheses that targeting multiple pathways simultaneously, selectively delivering therapeutics to areas of inflammation and/or resetting the immune system, could take efficacy to new levels. However, we have long waited for the arrival of some of these technologies to the bedside, or even far enough in the drug development process in spite of the initial enthusiasm. Some of the examples covered in this book include bispecific antibodies and genomic medicines, microparticles and targeted delivery of drugs to inflamed vasculature. Most published reviews and book chapters on novel therapies for inflammatory diseases describe positive attributes of molecules or technologies under investigation and the rationale for developing them into therapeutics. The originality and potential value of this book is not in the description of these targets or technologies from the point of view of their structure or mechanism of action exclusively, but rather, in making an effort to critically address the question of what is needed to move these technologies into the clinic. Has the technology not made it past the preclinical stage and why? Has it already been tested in humans and failed? What are the potential reasons behind those failures? What do experts in each field believe can be done better to increase the probabilities of success? In addition, the authors address the competitive landscape and summarize clinical studies that have failed in the respective area. They talk about the patient populations that would be required for the successful conduction of a clinical trial to test certain molecules, and they proactively share their views regarding both the potential and the drawbacks of targets or methodologies.

The Epigenetics of Autoimmune Diseases Moncef Zouali 2009-04-01 The role of epigenetic mechanisms in autoimmune disease is only now starting to become clear. Understanding these mechanisms, their effect on cellular function and the role of environmental factors is vital to determining how to manage these often debilitating and fatal diseases. Drawing on the research of leading experts, this book provides a valuable insight into this important new area of autoimmunity research and a clear, up-to-date view on the major advances in the field. Specific coverage includes: How highly developed epigenetic mechanisms are involved in several aspects of normal immune regulation, in addition to maintaining immune tolerance to self-determinants. Specific epigenetic aspects of human autoimmune diseases, including multiple sclerosis, systemic lupus erythematosus, rheumatoid arthritis, systemic sclerosis, autoimmune diabetes, thyroid autoimmunity, inflammatory bowel disease and autoimmune hepatitis. How understanding epigenetic mechanisms can lead to therapeutic strategies based on manipulation of this previously unexploited facet of immune regulation. Discussion of the novel approaches that are being investigated to prevent or treat autoimmune diseases. This book is an essential resource for those actively involved in the field. It is also of interest to basic researchers interested in understanding the origin of autoimmunity and clinical specialists interested in gaining in-depth understanding of the pathogenesis of autoimmune diseases and their treatment.

Stem Cell-Dependent Therapies Gerhard Gross 2013-10-29 Multipotent mesenchymal stem cells (MSCs) are a heterogeneous population of cells which reside in a variety of tissues. They differentiate into several mesodermal lineages, secrete a multitude of trophic factors and contribute to tissue homeostasis. MSCs are able to exert immunosuppressive activities by interfering with inflammatory cytokine production and with T- and B-cell proliferation. These immunomodulating properties make MSCs promising candidates for the treatment of chronic inflammatory and autoimmune disorders. There are, however, certain caveats involved including inappropriate migration of cells in the body,

immune rejection, tumor formation, or graft versus host disease (GvHD). This book investigates the current state of the MSC-dependent therapy of chronic inflammatory disorders and autoimmune diseases. Among the covered topics are GvHD, chronic kidney, liver and lung disease, ischemic heart and inflammatory bowel disease, diabetes, osteoarthritis, various rheumatic and neurological disorders and, lastly, tumors and solid organ transplantations. This book also questions the immunoprivileged status of MSCs, discusses the therapeutic role of MSCs in experimental animal disease models and their translation to the corresponding human disorders, envisions a role for MSCs in tumor interventions and, lastly, describes a systems biology approach for stem cells and inflammation.

The Autoimmune Diseases Noel R. Rose 2019-10-15 The Autoimmune Diseases, Sixth Edition, emphasizes the "3 P's" of 21st Century medicine: precision, prediction and prevention. Topics cover the modern systems approach to biology that involves large amounts of personalized, ongoing physiologic data ("omics") coupled with advanced methods of analysis, new tests of genetic engineering, such as CRISPR, auto inflammatory diseases, autoimmune responses to tumor immunotherapy, and information on normal immune response and disorders. Each of the major autoimmune disorders is discussed by researchers and clinical investigators experienced in dealing with patients. Chapters emphasize the immunologic basis of the disease as well as the use of immunologic diagnostic methods and treatments. The book also covers several cross-cutting issues related to the recognition and treatment of autoimmune diseases, including chapters on the measurement of autoantibodies and T cells, the use of biomarkers as early predictors of disease, and new methods of treatment. Gives a thorough and important overview on the entire field, framing individual disease chapters with information that compares and contrasts each disorder and its therapy Provides thorough, up-to-date information on specific diseases, along with clinical applications in an easily found reference for clinicians and researchers interested in certain diseases Keeps readers abreast of current trends and emerging areas in the field Ensures that content is not only up-to-date, but applicable and relevant Includes new, updated chapters that emphasize hot topics in the field, e.g., research on auto inflammatory diseases and autoimmune responses following cancer immunotherapy

Innate Immunity in Health and Disease Shailendra K. Saxena 2021-08-25 The book focuses on various aspects and properties of innate immunity, whose deep understanding is integral for safeguarding the human race from further loss of resources and economies due to innate immune response-mediated diseases. Throughout this book, we examine the individual mechanisms by which the innate immune response acts to protect the host from pathogenic infectious agents and other non-communicable diseases. Written by experts in the field, the volume discusses the significance of macrophages in infectious disease, tumor metabolism, and muscular disorders. Chapters cover such topics as the fate of differentiated macrophages and the molecular pathways that are important for the pathologic role of macrophages.

Gene Therapy for Autoimmune and Inflammatory Diseases Yuti Chernajovsky 2011-01-28 In this monograph about gene therapy of autoimmune and inflammatory disorders we have gathered international experts and leaders from different fields to review the state of the art advances on topics ranging from disease entities to vectors and engineered cells. The different approaches described in each chapter take into consideration the biomedical knowledge of these diseases and address the complexities of delivering long-term genetic interventions. Gene therapy also serves as a testing ground for new therapeutic entities and helps provide proof of principle for their potential therapeutic role in animal models of disease. Scaling up from mice to men still remains an important hurdle not only from the quantitative point of view, but also for currently unknown and unexpected secondary effects of the vector or the transgene. Some of these approaches have already been tested in the clinic, but much more needs to be done to understand the human conditions treated and the natural history of their pathology. We are indebted to the secretarial assistance of Ms. Lin Wells (Bone and Joint Research Unit, London, UK) and the help of Hans Detlef Klüber for his

help in getting this book published. We hope this book will be of interest to clinicians and scientists and inspiring to students of the subject who will use their own ingenuity and knowledge to further forward this discipline into clinical use.

Primary Immunodeficiency Disorders Amos Etzioni 2014-09-13 Primary Immunodeficiency Disorders: A Historic and Scientific Perspective provides a complete historical context that is crucial for students and researchers concerned with primary immunodeficiency. When researchers have a poor understanding of the way we arrived where we are in research, they can miss important points about a disease, or miss out on how to approach new diseases. This historical knowledge of research can assist greatly by showing how it was done in the past, demonstrating the successes and failures, so that it can be done better in the future. This book provides an understanding of the process going from clinical problem to lab and back to the clinic, based on historical experiences. Its chapters proceed from the discovery of the T and B cell lineages through the first BMT for immunodeficiency disorder; lab investigation and gene therapy for PID; the discovery of the gene for AT and its function; understanding cytokine defects; and many other stops along the way. Facilitates communication among physicians and other investigators concerned with immunological and inflammatory diseases

Summarizes for the first time all the known facts from 60 years of primary immunodeficiency research, and teaches how an important field in medicine was established Provides stimulating discussions on developing new medical therapies Highlights the importance of studying humans to understand mechanisms of disease that affect humans
Gene Therapy in Inflammatory Diseases Christopher H. Evans 2012-12-06 Gene therapy for inflammatory diseases is a new, burgeoning field of medicine. Edited by the undisputed pioneers of this area of research, this volume is the first devoted to its topic. It contains thirteen chapters, each written by leaders in their respective fields, that summarize the state of the art in developing novel, gene based treatments for inflammatory diseases. As well as providing an introduction to the basic concepts of gene therapy and the use of naked DNA approaches, the book describes the advances that have been made in applying them to arthritis, lupus, multiple sclerosis, diabetes, Sjogren's syndrome and transplantation. One chapter is devoted to discussing the first human clinical trials that apply gene therapy to the treatment of an inflammatory disease. As well as providing novel therapeutic approaches, gene therapy facilitates the development of new and improved animal models of disease; a chapter describing these advances is also included. As an up-to-date, timely book written by th

Mesenchymal Stem Cell Therapy Lucas G. Chase 2012-12-12 Over the past decade, significant efforts have been made to develop stem cell-based therapies for difficult to treat diseases. Multipotent mesenchymal stromal cells, also referred to as mesenchymal stem cells (MSCs), appear to hold great promise in regards to a regenerative cell-based therapy for the treatment of these diseases. Currently, more than 200 clinical trials are underway worldwide exploring the use of MSCs for the treatment of a wide range of disorders including bone, cartilage and tendon damage, myocardial infarction, graft-versus-host disease, Crohn's disease, diabetes, multiple sclerosis, critical limb ischemia and many others. MSCs were first identified by Friedenstein and colleagues as an adherent stromal cell population within the bone marrow with the ability to form clonogenic colonies in vitro. In regards to the basic biology associated with MSCs, there has been tremendous progress towards understanding this cell population's phenotype and function from a range of tissue sources. Despite enormous progress and an overall increased understanding of MSCs at the molecular and cellular level, several critical questions remain to be answered in regards to the use of these cells in therapeutic applications. Clinically, both autologous and allogenic approaches for the transplantation of MSCs are being explored. Several of the processing steps needed for the clinical application of MSCs, including isolation from various tissues, scalable in vitro expansion, cell banking, dose preparation, quality control parameters, delivery methods and numerous others are being extensively studied. Despite a significant number of ongoing clinical trials, none of the current therapeutic approaches have, at this point, become a standard of care

treatment. Although exceptionally promising, the clinical translation of MSC-based therapies is still a work in progress. The extensive number of ongoing clinical trials is expected to provide a clearer path forward for the realization and implementation of MSCs in regenerative medicine. Towards this end, reviews of current clinical trial results and discussions of relevant topics associated with the clinical application of MSCs are compiled in this book from some of the leading researchers in this exciting and rapidly advancing field. Although not absolutely all-inclusive, we hope the chapters within this book can promote and enable a better understanding of the translation of MSCs from bench-to-bedside and inspire researchers to further explore this promising and quickly evolving field.

Gene Therapy of Autoimmune Disease Gerald J. Prud'homme 2007-02-26 Autoimmune diseases are diverse and responsible for considerable morbidity. Their etiology remains largely unknown, and current therapy with anti-inflammatory drugs is prone to adverse effects, and rarely curative. New therapies with anti-cytokine antibodies or receptors are promising, but require frequent administration of expensive protein drugs. **Gene Therapy of Autoimmune Diseases** comprehensively reviews research in gene therapy for autoimmune diseases with viral or non-viral vectors. Gene therapy offers the possibility of long-term, continuous delivery of a wide variety of immunosuppressive, anti-inflammatory, or tolerance-inducing agents. Moreover, highly specific genetically modified cells can be produced. This book discusses the most promising avenues in this exciting new field.

Sjogren's Syndrome Alessia Alunno 2016-06-07 **Sjogren's Syndrome: Novel Insights in Pathogenic, Clinical and Therapeutic Aspects** provides the reader with an overview of current knowledge about Sjogren's Syndrome. The book summarizes the huge amount of literature concerning related advances in genetic background, pathogenesis, clinical picture, and therapeutic approaches. It integrates basic immunology concepts, clinical aspects, and pharmacological issues. Scientific progress has allowed us to unmask novel pathogenic mechanisms, to perform genome wide studies, and to identify clinical and serological features associated with different disease subsets and, eventually, different disease prognoses. In addition, the increasing knowledge about SS pathogenesis provides the rationale to employ targeted therapies in SS as has already occurred in rheumatoid arthritis and systemic lupus erythematosus. Discusses heterogeneity of topics and audience, from basic immunology to clinical aspects and therapeutics Provides novel lines of investigation and supports the management of patients requiring novel therapeutic approaches Presents a deeper knowledge on SS clinical management as well as on immunological aspects possibly leading to new lines of investigation Offers a bridge between the clinician and the scientist, and vice versa Provides the reader with most recent and relevant updates due to the novelty of topics

Moderate to Severe Psoriasis, Fourth Edition John Y. M. Koo 2014-03-18 Written by experts in the dermatology field, this new fourth edition of **Moderate-to-Severe Psoriasis** discusses the current use of biologics and other pharmacologic and phototherapy treatments for moderate-to-severe psoriasis. Illustrated with high quality color figures, this standalone text emphasizes safe and effective treatments for the psoriasis patient that are perfect for the dermatologist in daily practice. New to this edition are chapters on day treatment programs, new agents, erythrodermic and pustular psoriasis, special populations, and pharmacogenetics.

The Epigenetics of Autoimmunity Rongxin Zhang 2018-04-25 **The Epigenetics of Autoimmunity** covers a topic directly related to translational epigenetics. Via epigenetic mechanisms, a number of internal and external environmental risk factors, including smoking, nutrition, viral infection and the exposure to chemicals, could exert their influence on the pathogenesis of autoimmune diseases. Such factors could impact the epigenetic mechanisms, which, in turn, build relationship with the regulation of gene expression, and eventually triggering immunologic events that result in instability of immune system. Since epigenetic aberrations are known to play a key role in a long list of human diseases, the

translational significance of autoimmunity epigenetics is very high. To bridge the gap between environmental and genetic factors, over the past few years, great progress has been made in identifying detailed epigenetic mechanisms for autoimmune diseases. Furthermore, with rapid advances in technological development, high-throughput screening approaches and other novel technologies support the systematic investigations and facilitate the epigenetic identification. This book covers autoimmunity epigenetics from a disease-oriented perspective and several chapters are presented that provide advances in wide-spread disorders or diseases such as systemic lupus erythematosus (SLE), rheumatoid arthritis (RA), multiple sclerosis (MS), type 1 diabetes (T1DM), systemic sclerosis (SSc), primary Sjögren's syndrome (pSS) and autoimmune thyroid diseases (AITDs). These emerging epigenetic studies provide new insights into autoimmune diseases, raising great expectations among researchers and clinicians. This seminal book on this topic comprehensively covers the most recent advances in this exciting and rapidly developing new science. They might reveal not only new clinical biomarkers for diagnosis and disease progression, but also novel targets for potential epigenetic therapeutic treatment. Provides the accurate and cutting-edge information on autoimmunity epigenetics. Wide coverage appeals to those interested in fundamental epigenetics and inheritance to those with more clinical interests. Critical reviews of the means of deriving and analysing autoimmunity epigenetics information as well as its translational potential. Up-to-date coverage of emerging topics in autoimmunity epigenetics.

Genetic and Functional Approaches to Understanding Autoimmune and Inflammatory Pathologies. Abbas Raza 2020. Our understanding of genetic predisposition to inflammatory and autoimmune diseases has been enhanced by large scale quantitative trait loci (QTL) linkage mapping and genome-wide association studies (GWAS). However, the resolution and interpretation of QTL linkage mapping or GWAS findings are limited. In this work, we complement genetic predictions for several human diseases including multiple sclerosis (MS) and systemic capillary leakage syndrome (SCLS) with genetic and functional data in model organisms to associate genes with phenotypes and diseases. Focusing on MS, an autoimmune inflammatory disease of the central nervous system (CNS), we experimentally tested the effect of three of the GWAS candidate genes (SLAMF1, SLAMF2 and SLAMF7) in the experimental autoimmune encephalomyelitis (EAE) mouse model and found a male-specific locus distal to these loci regulating CNS autoimmune disease. Functional data in mouse suggests this male-specific locus modulates the frequency of immune cells including CD11b+, TCR[alpha beta]+CD4+Foxp3+, and TCR[alpha beta]+CD8+IL-17+ cells during EAE disease. Orchiectomy experiments demonstrate that this male specific phenotype is dependent on testis but not testosterone (T) or 5[alpha]-dihydrotestosterone (DHT). Using a bioinformatic approach, we identified SLAMF8 and SLAMF9 along with other differentially expressed genes in linkage with MS-GWAS predictions whose expression is testis-dependent, but not directly regulated by T or DHT, as potential positional candidates regulating CNS autoimmune disease. Further refinement of this locus is required to identify the causal gene(s) that may be targeted for prevention and/or treatment of MS in men. Using SCLS, an extremely rare disorder of unknown etiology characterized by recurrent episodes of vascular leakage, we identified and modeled this disease in an inbred mouse strain, SJL, using susceptibility to histamine- and infection-triggered vascular leak as the major phenotypic readout. This trait "Histamine hypersensitivity" (Hsth/Hsth) was mapped to a region on Chr 6. Remarkably, Hsth is syntenic to the genomic locus most strongly associated with SCLS in humans (3p25.3). Subsequent studies found that the Hsth locus is not unique to SJL but additional mouse strains also exhibit Hsth phenotype. Considering GWAS studies in SCLS are limited by the small number of patients, we utilized interval-specific SNP-based association testing among Hsth phenotyped mouse strains to predict Hsth candidates. Furthermore, to dissect the complexity of Hsth QTL, we developed network-based functional prediction methods to rank genes in this locus by predicting functional association with multiple Hsth-related processes. The top-ranked genes include Cxcl12, Ret,

Cacna1c, and Cntn3, all of which have strong functional associations and are proximal to SNPs segregating with Hsth. Lastly, we utilized the power of integrating genetic and functional approaches to understand susceptibility to Bordetella pertussis and pertussis toxin (PTX) induced histamine sensitization (Bphs/Bphs), a sub-phenotype with an established role in autoimmunity. Congenic mapping in mice had earlier linked Bphs to histamine H1 receptor gene (Hrh1/H1R) and demonstrated that H1R differs at three amino acid residues in Bphs-susceptible and -resistant mice. Our subsequent studies identified eight inbred mouse strains that were susceptible to Bphs despite carrying a resistant H1R allele. Genetic analyses mapped the locus complementing Bphs to mouse Chr 6, in linkage disequilibrium with Hrh1; we have designated this Bphs-enhancer (Bphse). Similar to the approaches used for Hsth, we utilized interval-specific SNP based association testing and network-based functional enrichment to predict nine candidate loci for Bphse including Atp2b2, Atg7, Pparg, Syn2, Ift122, Raf1, Mkrn2, Timp4 and Gt(ROSA)26Sor. Overall, these studies demonstrate the power of integrating genetic and functional methods in humans and animal models to predict highly plausible loci underlying QTL/GWAS data.

Hematopoietic Stem Cell Transplantation and Cellular Therapies for Autoimmune Diseases Richard K. Burt 2021-11-17 This book summarizes the global progress in medical and scientific research toward converting traditionally chronic autoimmune diseases into a drug-free reversible illness using hematopoietic stem cell transplantation (HSCT) and other cellular therapies such as T regulatory cells (Treg), mesenchymal stromal/stem cells, and chimeric antigen receptor T (CAR T) cells in order to reintroduce sustained immune tolerance. This title provides information on different types of stem cells and immune cells; post-transplant immune regeneration; cellular regulatory requirements; ethical and economic considerations; and the advantages and disadvantages of HSCT in the treatment of a variety of autoimmune diseases versus current conventional treatments. Arranged by disease, the text provides a comprehensive guide to HSCT for all types of autoimmune/immune disorders including monogenetic autoimmune diseases; autoimmune aplastic anemia; neurologic immune diseases including multiple sclerosis, chronic inflammatory demyelinating polyneuropathy, neuromyelitis optica, and stiff person syndrome; rheumatologic diseases such as systemic sclerosis and systemic lupus erythematosus; dermatologic diseases such as pemphigus; gastrointestinal disorders such as Crohn's disease and celiac disease; and immune-mediated endocrinologic disease type I diabetes mellitus. Guidance is provided on the transplantation technique, cell collection and processing, conditioning regimens, infections, and early and late complications. Key Features Outlines therapies and techniques for HSCT for autoimmune diseases Discusses the advantages of HSCT over conventional therapies Reviews the entire process of stem cell therapy from harvest and ethics to indications, efficacy, and regulatory oversight

Opportunities and Challenges of the Therapies Targeting CNS Regeneration H.D. Perez 2005-05-06 Today combined oral contraceptives are the most convenient and accepted way of hormonal contraception. Nevertheless, there is a constant demand in the medical community and consumer market for innovation, additional benefits during use and lower hormonal load despite the high safety profile of available products. At the Ernst Schering Research Foundation Workshop 52 new perspectives and mechanisms for tissue-selective, estrogen-free contraception were discussed. The aim of the workshop was to bring together experts in the field of molecular and pharmacodynamic action of progestins with clinicians and medical experts to discuss potential medical endpoints, physiological reactions and (bio)marker useful to describe the tissue selectivity and the contraceptive action of new progestins in different target organs. A major success factor for the realization of these new concepts is a deeper understanding of local pharmacological responses to progestins in general and to new progestins in particular. TOC:New Strategies for CNS Repair; Heterogeneity of Multiple Sclerosis: Implications for Therapy Targeting Regeneration; The Neuroprotective Effect of Inflammation: Implications for the Therapy of Multiple Sclerosis; Fibroblast Growth Factors in Oligodendrocyte Physiology and Myelin Repair;

White Matter Progenitor Cells Reside in an Oligodendrogenic Niche; At the Interface of the Immune System and the Nervous System: How Neuroinflammation Modulates the Fate of Neural Progenitors in vivo; Remyelination and Restoration of Axonal Function by Glial Cell Transplantation; Gene and Stem Cell Therapy for Autoimmune Demyelination; Novel Gene Therapeutic Strategies for Neurodegenerative Diseases; Measuring Injury and Repair of Myelin and Neurons in Multiple Sclerosis; The Role of Polypeptide Growth Factors in Recovery from Stroke

Recent Developments in Myelodysplastic Syndromes Ota Fuchs 2019-02-20 This book deals with the rapid progress in the area of myelodysplastic syndromes (MDS). MDS are a group of age-associated heterogeneous malignant bone marrow stem cell disorders. MDS are characterized by ineffective hematopoiesis, which leads to refractory cytopenias and to clonal instability. Patients with MDS have myeloid dysplasia, intramedullary apoptosis and an increased risk of transformation to acute myeloid leukemia (AML). The use of next generation sequencing has allowed for the identification of molecular mutations in several genes in about 90% of MDS patients. Several mutations will likely be incorporated into future prognostic scoring systems for MDS. About 50% of MDS cases are characterized by the presence of cytogenetic abnormalities. The correct morphological and cytogenetic analysis interpretation plays an important role in diagnosis and prognosis of these disorders. Cell death and an inflammatory gene signature are associated with MDS. Better understanding of the genetic and molecular mechanisms of MDS pathogenesis provides an opportunity for new treatment strategies to be developed. Promising novel therapies targeting pathophysiological mechanisms of MDS are being studied but the drugs currently used in MDS therapy remain limited. The only curative therapy for MDS is allogeneic hematopoietic stem cell transplantation. Recent advances in strategies to minimize transplant-related toxicity make this treatment possible for more MDS patients who are sufficiently fit.

Immunogenetics: A Molecular and Clinical Overview Muneeb U. Rehman 2021-11-30 A Molecular Approach to Immunogenetics, Immunogenetics: A Molecular and Clinical Overview, Volume One provides readers with an exclusive, updated overview on the scientific knowledge, achievements and findings in the field of immunogenetics. The book presents readily available, updated information on the molecular and clinical aspects of immunogenetics, from origin and development to clinical applications and future prospects. The breadth of information goes from basics to developments, clinical applications and future prospects. The book's most attractive attribute is its academic and clinical amalgamation that covers both the theoretical and practical aspects of immunogenetics. An additional feature of the book is a special chapter on viral genetics that covers COVID-19. Above all, the book contains chapters that discuss immunogenetics in relation to pharmaco-genomics and immune-toxicology. Contains exclusive information about research on immunogenetics from around the globe Includes minute and recent details that will be the prerequisite requirement for any researcher who wants to work on immunogenetics and its applications Comes fully-equipped with pictures, illustrations and tables that deliver information in a meticulous manner

Cytokines and Autoimmune Diseases Vijay K. Kuchroo 2001-11-09 Leading researchers synthesize scattered experimental data to help develop an intimate understanding of how cytokines and chemokines are involved in the pathogenesis of autoimmune diseases. The many chapters offer critical reviews the basic mechanisms controlling cytokine induction and regulation, as well as the resulting production of proinflammatory and anti-inflammatory cytokines, the former of which induces organ-specific autoimmune diseases. From the vantage of these insights, they address the role of cytokines in a wide variety of autoimmune diseases, uveitis, encephalomyelitis, multiple sclerosis, human type 1 diabetes, rheumatoid arthritis, SLE, and myasthenia gravis. Authoritative and state-of-the-art, Cytokines and Autoimmune Disease highlights

the enormous therapeutic potential of cytokine modulation in the treatment of autoimmune disease.

Biologic Markers in Immunotoxicology National Research Council 1992-02-01 Are environmental pollutants threatening the human immune system? Researchers are rapidly approaching definitive answers to this question, with the aid of biologic markers--sophisticated assessment tools that could revolutionize detection and prevention of certain diseases. This volume, third in a series on biologic markers, focuses on the human immune system and its response to environmental toxicants. The authoring committee provides direction for continuing development of biologic markers, with strategies for applying markers to immunotoxicology in humans and recommended outlines for clinical and field studies. This comprehensive, up-to-date volume will be invaluable to specialists in toxicology and immunology and to biologists and investigators involved in the development of biologic markers.

gene-therapy-for-autoimmune-and-inflammatory-diseases-milestones-in-
drug-therapy

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