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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

Cytokine Gene Therapy of Autoimmune Disease 1998

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

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.

The Establishment of Immune Tolerance Through Genetic Manipulation of Haematopoietic Stem Cells Zeyad Nasa 2014 Autoimmune diseases are incurable and affect about 6-9 % of the population. Treatments of autoimmune diseases include the use of monoclonal antibodies, anti-inflammatory and immunosuppressive drugs, or replacement therapy like insulin for type 1 diabetes. Not all these treatments address the cause, but only aim to reduce symptoms. Autologous bone marrow transplantation (BMT) is currently being trialled to treat autoimmune diseases, however it is associated with high relapse rates. Multiple Sclerosis (MS) and its animal model, experimental autoimmune encephalomyelitis (EAE), are autoimmune diseases of the central nervous system. T regulatory cells (Tregs) have the capacity to supress a wide range of immune responses and play a key role in controlling autoreactive reactions in the periphery, making them an ideal candidate for cellular treatment of autoimmune diseases. They are mainly taken to represent the CD4+ CD25high FoxP3+ T-cells. Their developments happen naturally in the thymus from a separate lineage and their TCR repertoire is mainly self-reactive. The transcription factor Foxp3 is crucial for Tregs development and function. It has been demonstrated that antigen specific T cells transduced with Foxp3 gene have the capability to reduce the symptoms of autoimmune disease. Bone marrow gene modification and subsequent transplantation can be used as a method to express genes, such as T cell receptors linked to Foxp3 gene, in self-renewing BM derived cells.My hypothesis is induce tolerance to autoimmune diseases by the transfer of bone marrow (BM) stem cells, that have been genetically engineered to express self-antigen, into preconditioned mice using a less toxic non-myeloablative chemotherapy regime.In this study I have examined this hypothesis in EAE induced by the self-antigen myelin oligodendrocyte glycoprotein (MOG) and by substituting irradiation which is highly toxic with less toxic non myeloablative regimen drug Treosulfan, as a proof-of-principle that tolerance can be generated with less toxic conditioning. I have shown that when mice are conditioned with a non-myeloablative dose of Treosulfan and received BM cells that have been retrovirally transduced with the autoantigen MOG, they remained EAE free. Furthermore, through this study I have found that using a chemotherapy drug, such as Treosulfan, conditioning promoting a low degree of chimerism at non-myeloablative dose was adequate to promote antigen specific tolerance and protect mice from EAE. In a more clinically relevant scenario, when Treosulfan at non-myeloablative dose was included into a curative protocol for treating mice with established EAE, it resulted in complete remission and proved to be efficient in maintaining disease resistance following subsequent challenge. Taking a different approach but still aimed at promoting tolerance, I have developed a retroviral vector designed to generate antigen specific Tregs. This vector was encoding the V[alpha]3.2 and V[beta]11 TCR chains (2D2-TCR) specific for the autoantigen MOG35-55 peptide linked to Foxp3 gene. Therefore, I hypothesized that the introduction of the 2D2-TCR plus Foxp3 into BM stem cells would lead to the generation of T regulatory cells specific for EAE autoantigen, which would impose immune regulation and prevent EAE induction. The generated retroviral constructs were tested in vitro in various cell lines including isolated mouse splenic naïve CD4 cells and found to be able to produce cells expressing 2D2-TCR and Foxp3 as well as other Tregs markers such as CD25, GITR and CTLA-4. Generated retroviruses were also used to transduce BM and create chimeric mice with a quantifiable subpopulation of T cells with MOG35-55 TCR specificity and Foxp3 driven Treg phenotype.

However, mice generated were not efficiently tolerant to the induction of EAE. Flow cytometry analysis revealed that a significant population of 2D2-TCR-Foxp3-GFP cells were detected in the thymus but far less in the periphery with lesser Foxp3 expression than that seen in the thymus. This finding suggests that Foxp3 expression alone is not enough to confer Treg cell features and that other epigenetic and transcriptional factors are likely to be involved to ensure their stability and function.

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.

Molecular Autoimmunity Moncef Zouali 2006-04-07 2004 marks the 100th anniversary of the first description of the autoimmune disease paroxysmal cold hemoglobinuria, a rare hemolytic disorder, by Julius Donath and Karl Landsteiner. After a century of research, the list of autoimmune diseases has become impressive. With a prevalence of approximately 5% of the world-wide population, these chronic, debilitating conditions affect almost every major organ of the body and, for reasons that remain unclear, are much more prevalent in woman than in men. Despite our rapidly expanding knowledge of the cellular and molecular pathways that govern a normal immune response, deciphering the precise etiology of autoimmune diseases remains an important challenge. Over the last few years, our understanding of the pathogenesis of autoimmune diseases has improved rapidly, leading to the emergence of elegant immunointervention strategies. Molecular Autoimmunity illustrates how cutting-edge research is continuing to advance our understanding of autoimmune disease mechanisms and identifies novel therapeutic targets that provide a hope for effective future treatments. This volume contains a selected number of exciting advances in unraveling autoimmune reactions, and the resulting new armory of experimental immunotherapies that may lead to new ways of controlling autoimmune reactions.

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, uvetis, 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.

Treatment of Autoimmune Disorders Michael Sticherling 2012-12-06 Progress in basic and clinical immunology within the last two decades has provided profound insight into the immune system and its role in preventing endogenous and exogenous damage. In contrast, disbalances within this system can result in autoimmune disorders which may affect diverse organs and result in distinct clinical pictures. In many of these, however, the individual etiopathogenetic mechanisms are poorly understood and even more their clinical symptoms are hard to treat. The book offers insight into basic mechanisms of autoimmune disorders. It includes neurological, gastrointestinal, ophthalmological and skin diseases as well as current and future therapeutic options including immunomodulatory drugs and different vaccination strategies. By addressing diverse organ systems, both singular and shared features are elaborated. Thus an exchange of ideas is intended across research on single organ systems within a truly interdisciplinary setting.

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.

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 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 medicated 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.

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

Nanomedicine for Inflammatory Diseases Lara Scheherazade Milane 2017-09-19 Nanomedicine for Inflammatory Diseases is a cutting-edge resource for clinicians and scientists alike, working at the intersection of development and clinical therapeutics. This text is ideal for graduate level courses in nanomedicine, translational medicine, or inflammatory disease. This book is a progressive hallmark in translational medicine as it unites clinicians treating inflammatory disease with scientists developing experimental nanomedicine therapeutics. The commonality is made through a translational nanomedicine expert – bridging the gap between the laboratory benchtop and the clinical bedside.

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.

Immunopharmacology Manzoor M. Khan 2008-12-19 During the past decades, with the introduction of the recombinant DNA, hybridoma and transgenic technologies there has been an exponential evolution in understanding the pathogenesis, diagnosis and treatment of a large number of human diseases. The technologies are evident with the development of cytokines and monoclonal antibodies as therapeutic agents and the techniques used in gene therapy. Immunopharmacology is that area of biomedical sciences where immunology, pharmacology and pathology overlap. It concerns the pharmacological approach to the immune response in physiological as well as pathological events. This goals and objectives of this textbook are to emphasize the developments in immunology and pharmacology as they relate to the modulation of immune response. The information includes the pharmacology of cytokines,

monoclonal antibodies, mechanism of action of immune-suppressive agents and their relevance in tissue transplantation, therapeutic strategies for the treatment of AIDS and the techniques employed in gene therapy. The book is intended for health care professional students and graduate students in pharmacology and immunology.

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

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 autoimune 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.

Pathogenesis of Systemic Lupus Erythematosus Alberta Hoi

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

Conquering Rheumatoid Arthritis Thomas F. Lee 2009-09-25 . . . 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 recommeded.--Frederick Wolfe, M.D., Director, National Data Bank for Rheumatic Diseases, Arthritis Research Center FoundationAs 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.

Role of the IL-23/IL-17 Pathway in Chronic Immune-Mediated Inflammatory Diseases: Mechanisms and Targeted Therapies Elisabetta Bianchi 2021-11-10

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

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 for Autoimmune and Inflammatory Diseases Yuti Chernajovsky 2011-01-28 In this monograph about gene therapy of autoimmune and inflammatory d- orders 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 h- dle 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 n- ural 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 c- nicians 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.

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.

Autoimmune Liver Diseases Hiromasa Ohira 2014-08-21 Autoimmune Liver Diseases summarizes the recent high-impact research and clinical findings obtained in Japan in the study and treatment of autoimmune liver diseases. Although these disorders are relatively rare, they are recognized as an important group of refractory liver diseases, the most common of which are autoimmune hepatitis (AIH) and primary biliary cirrhosis (PBC). The book therefore comprises two major sections, one dealing with AIH, the other with PBC. AIH in Japanese patients creates a unique disease population, as its clinical features are different from those of Western patients resulting from the different genetic background of the two patient populations. Also, mouse models of neonatal thymectomy-PD-1 knockout mice, clinical analyses of acute hepatitis-like manifestations, and research findings on IgG4-related autoimmune hepatitis have been reported in Japan and are included in this book. A disease-susceptibility gene specific to Japanese PBC patients has also recently been discovered. Because of the relatively homogeneous population of Japan, analyses conducted with Japanese PBC patients have yielded findings that are highly relevant to the pathogenesis of the disease. Furthermore, new pathological staging criteria, anti-gp210 antibodies and the basis they provide for improved

accuracy of prognosis, treatment with bezafibrate, and the outcomes of living-donor liver transplantation are also presented here. This volume therefore serves as a useful resource not only for hepatologists, but also for researchers, clinical residents, and medical students both in Japan and in other countries.

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 Stemm 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

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. Therapeutical approaches discussed include oral tolerance, the use of anti-CD4 monoclonal antibodies, IL-10 and anti-TNFa 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.

Posttranscriptional Gene Regulation of IL-17 by the RNA-binding Protein HuR Required for Initiation of Autoimmune Neuroinflammation Jing Chen 2013 Posttranscriptional gene regulation is a critical mechanism of controlling the gene expression. The RNA binding-proteins (RBPs) mediate RNA splicing, localization, stabilization, and translation. Human antigen R (HuR/also known as HuA) is a member of the Hu family of RBPs which also include HuB, HuC, and HuD. HuR is homologous to the Drosophila embryonic lethal abnormal vision (Elav) family.

HuR is ubiquitously expressed in all tissues, while HuB, HuC and HuD are expressed primarily in neuronal system. HuR has been shown to play a critical role in cancer and chronic inflammatory diseases such as asthma and colitis. In many diseases, HuR positively regulates the stability of target mRNAs via binding the adenylate-uridylate-rich elements (AREs) present in the 3' untranslated region (UTR). Many inflammatory cytokine mRNAs including TNF-[alpha], IL-4 and IL-13 are direct HuR target. The role of HuR in inflammatory diseases, however, needs to be studied. Interleukin-17 (IL-17), an important inflammatory cytokine, is produced by activated T helper-17 (Th17) cells and other immune cells. IL-17-producing Th17 cells are major contributors to chronic inflammatory and autoimmune diseases, such as multiple sclerosis (MS), rheumatoid arthritis (RA) and inflammatory bowel disease (IBD). Although the transcriptional regulation of Th17 cells is well understood, the posttranscriptional regulation of IL-17 gene expression by HuR remains to be elucidated. To better understand if HuR regulates IL-17 gene expression and plays a pathogenic role in IL-17-mediated autoimmune neuroinflammation, we performed in vitro experiments including cell culture, real time PCR, western blot, flow cytometry, and biotin pull-down assay. For in vivo studies, we generated OX40-cre HuRf/f conditional knockout (KO) mice, in which HuR gene was specifically deleted in activated T cells. We used the KO and HuRf/f (control) mice to induce experimental autoimmune encephalomyelitis (EAE), a mouse model for human MS. The results showed that the production of IL-17 mRNA and protein correlated with the levels of HuR mRNA and protein in Th17 cells. Moreover, we demonstrated that IL-17 mRNA and protein were significantly reduced in HuR KO Th17 cells as compared to WT Th17 cells. This supports the hypothesis that HuR positively regulates IL-17 mRNA expression. To identify the mechanism, we performed RNA immunoprecipitation (RIP) and biotin pull down assays. The results showed that HuR directly bound to IL-17 mRNA 3' UTR. To determine the function of HuR in protecting IL-17 mRNA from degradation, IL-17 mRNA decay rates were measured using actinomycin D treatment in HuR KO and WT Th17 cells. The results showed that knockout of HuR decreased IL-17 mRNA half-life compared to controls, indicating that the binding of HuR to 3'UTR increased IL-17 mRNA steady-state. In addition, knockout of HuR decreased the phosphorylation of STAT3, the transcription factor for IL-17, and delayed cell proliferation. To further investigate the role of HuR in activated T cells in autoimmune neuroinflammation, we transferred HuR KO and WT Th17 cells to syngenic recipients. The clinical signs indicated that mice receiving HuR KO Th17 cells had remarkable delayed onset and significantly reduced disease severity as compared to mice receiving WT Th17 cells. These results were supported by histopathology of spinal cords. The inflammatory infiltration and CD3 expression in recipients receiving HuR KO Th17 cells were much more reduced as compared to recipients receiving WT Th17 cells. Taken together, these results revealed an underappreciated posttranscriptional control mechanism of IL-17 by HuR, and demonstrated that HuR plays an important role for the initiation of autoimmune neuroinflammation. Therefore, further study of HuR function and regulation may identify novel therapeutic target for intervention in IL-17-mediated chronic inflammation.

Clinical Immunology E-Book Robert R. Rich 2022-08-23 Offering unique, comprehensive coverage of both basic science and clinical scenarios, Clinical Immunology: Principles and Practice, 6th Edition, brings you up to date with every aspect of this fast-changing field. It examines the molecular, cellular, and immunologic bases of immunologic diseases and their broader systemic implications; it also includes complete coverage of common and uncommon immunologic disorders. Updated with all the latest immunologic research and clinical

implications, including breakthrough immunotherapies and molecular-based treatment protocols, this fully revised edition provides authoritative guidance from some of the most respected global leaders in immunology in one complete, well-illustrated volume. Includes extensive revisions that reflect rapidly expanding research and clinical advances, including breakthrough drug and immunotherapies such as immune checkpoint inhibitors, immunotherapies for cancer, precision medicine, and transfusion medicine. Contains new chapters on COVID-19, immune responses, and the role of the immune system; immunoregulatory deficiencies; immune checkpoints; CAR T cells, including new cellular-based immunotherapy; gene therapy, including CRISPR and gene selection; and a clinically focused chapter on asthma. Provides new genetics content focused on data applications. Addresses notable advances in key areas such as the importance of the microbiota to normal immune system development and to the pathogenesis of immunologic and inflammatory diseases; relationships between the innate and adaptive immune systems; progress in rapid and cost-effective genomics; cell signaling pathways and the structure of cell-surface molecules; and many more. Covers hot topics such as the role of genetics and genomics in immune response and immunologic disease, atherosclerosis, recurrent fever syndromes, aging and deficiencies of innate immunity, the role of microbiota in normal immune system development and in the pathogenesis of immunologic and inflammatory diseases, and novel therapeutics. Features a user-friendly format with color-coded boxes highlighting critical information on Key Concepts, Clinical Pearls, Clinical Relevance, and Therapeutic Principles. Summarizes promising research and development anticipated over the next 5–10 years with "On the Horizon" boxes and discussions of translational research.

Th 17 Cells: Role in Inflammation and Autoimmune Disease Valérie Quesniaux 2009-03-12 The IL-17 cytokines represent a novel family of cytokines, which defines a new effector T cell, the Th17 cell, and extend the Th1-Th2 paradigm. Th17 cells in part co-express at least IL-17A and IL-17F, IL-21 and IL-22. IL-17 A/F are produced by T cells (and), iNKT cells, and possibly neutrophils, dendritic cells and Paneth cells. The regulation of IL-17 family member’s expression, and the identification of effector mechanisms are an area of intense current research. Recognized regulators of IL-17A expression include the nuclear receptor ROR t, proinflammatory cyt- ines such as IL-1, IL-6 with TGF- , IL-21, IL-23 IL-25 in the absence of IFN- and IL-4, which are discussed. Recent data suggest that IL-17A may have a dual fu- tion – pro-inflammatory and anti-inflammatory- suggesting that IL-17A may also contribute to terminate inflammation. Further, a reciprocal regulation of Th17 and regulatory T cells including the role of retinoic acid and TGF- is discussed. The discovery that patients with rheumatoid arthritis, allergic disorders, psor- sis and inflammatory bowel disease express IL-17A generated interest in the medical community and instigated a flurry of experimental research on the potential role of Th17 in inflammatory diseases. Experimental studies confirmed that IL-17A is induced and is critical for the development of allergic lung inflammation, arthritis, bacterial sepsis, experimental allergic encephalomyelitis and myocarditis, as well as other inflammatory con- tions including organ transplantation. The role of IL-17F and IL-22 is still poorly defined and is only slowly emerging.

Hematopoietic Stem Cell Transplantation and Cellular Therapies for Autoimmune Diseases Richard K. Burt 2021-11-15 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

Periodic and Non-Periodic Fevers Rolando Cimaz 2019-10-29 This book, written by very well-known opinion leaders in the field, covers all aspects of periodic and non –periodic fevers, and related disorders. The expression refers to several different auto-inflammatory diseases, showing similar symptoms–the primary symptom being a recurrent fever for an infectious cause cannot be found. The opening chapters give some historical hints, explain the genetic basis of the disease and provide insights into the pathogenesis derived from recent experimental studies and guides the reader through classification and nomenclature. A large part of the book is then devoted to a detailed description of the specific related diseases and their clinical presentations, the disease course, and potential complications in both pediatric and adult patients. The advice regarding treatment is based on the best currently available evidence in this constantly evolving area. The book is part of Springer's series Rare Diseases of the Immune System, which presents recently acquired knowledge on pathogenesis, diagnosis, and therapy with the aim of promoting a more holistic approach to these conditions. Autoinflammatory diseases are hereditary disorders that are caused by single-gene defects in innate immune regulatory pathways and are characterized by a clinical and biological inflammatory syndrome in which there is limited, if any, evidence of autoimmunity. Periodic and Non-Periodic Fevers will be an invaluable source of up-to-date information for all practitioners involved in the care of patients with these disease.

Investigating and harnessing T-cell functions with engineered immune receptors and their ligands Bruno Laugel 2015-01-22 T-cells are an essential component of the immune system that provide protection against pathogen infections and cancer and are involved in the aetiology of numerous autoimmune and autoinflammatory pathologies. Their importance in disease, the relative ease to isolate, expand and manipulate them ex vivo have put T-cells at the forefront of basic and translational research in immunology. Decades of study have shed some light on the unique way T-cells integrate extrinsic environmental cues influencing an activation program triggered by interactions between peptide-MHC complexes and the antigen-recognition machinery constituted of clonally distributed T-cell receptors and their co-receptor CD4 or CD8. The manipulation of these molecular determinants in cellular systems or as recombinant proteins has considerably enhanced our ability to understand antigen-specific T-

cell activation, to monitor ongoing T-cell responses and to exploit T-cells for therapy. Even though these principles have given numerous insights in the biology of CD8+ T-cells that translate into promising therapeutic prospects, as illustrated by recent breakthroughs in cancer therapy, they have proven more challenging to apply to CD4+ T-cells. This Research Topic aims to provide a comprehensive view of the recent insights provided by the use of engineered antigen receptors and their ligands on T-cell activation and how they have been or could be harnessed to design efficient immunotherapies.

The Paradox of the Immune System Louis J. Catania 2022-08-12 The Paradox of the Immune System: Protection, Inflammation, Autoimmune Disease and Beyond provides a provocative approach to immunology as a "double-edged sword." While it is our greatest protector, it is also the cause of chronic inflammation that leads to autoimmune disease, cancer and infectious diseases like COVID-19. Sections cover the basic science of immunology and its intimate genetic associations, biomedical hypotheses asserting immunology as the basis of all human diseases, and elaborate on immunology as "the enemy within us." This engaging, original approach to a science so personal provides new and invaluable understanding on the bioscience that controls our lives. Written in an expository style that allows for maximum understanding of the complex science presented Presents the unfolding of immunology from a natural (innate) system into an adaptive system leading to chronic inflammation and ultimate disease Provides readers with a unique perspective on health, wellness and disease

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.

Immunology and Liver M.P. Manns 2012-12-06 In 1992, the Falk Symposium No. 70 dealt with the topic `Immunology and Liver'. At that time basic mechanisms of immunology as well as immunopathogenetic mechanisms in viral and autoimmune liver diseases were discussed. Now, 7 years later, the Falk Symposium No. 114, held in Basel, Switzerland, October 20-21 1999 (Part I of the Basel Liver Week 1999), focused on immunology in autoimmune liver diseases. In the first section basic mechanisms of autoimmunity are presented, including the relevance of superantigens and the role of apoptosis. A further topic is the latest developments concerning animal models for autoimmune diseases. Recently the International Autoimmune Hepatitis Group newly defined and reclassified the syndrome of autoimmune hepatitis. Autoimmune hepatitis is now identified and studied in all parts of the world, including Asia and South America. A special variant of autoimmune hepatitis was identified as one organ manifestation of the autoimmune polyendocrine syndrome type 1, a genetic disease caused by mutations in a single transcription factor. Drug- and hepatitis-virus induced immune mediated liver diseases may serve as models for nonhepatic immune mediated disorders. DNA technology has increased our knowledge of the immunogenetic background of autoimmune liver diseases. Among the cholestatic immune mediated liver diseases, significant progress has been made concerning primary biliary cirrhosis, in particular regarding the identification of

mitochondrial antigens and the characterisation of the immune reactions directed at them. The involvement of infectious agents in PBC as well as the definition of overlap syndromes is a particular focus for basic and clinical research in this area. Concerning the therapy of autoimmune liver diseases, corticosteroids and azathioprin remain the state of the art for autoimmune hepatitis, while bile acids have become well established in treatment of primary biliary cirrhosis as well as primary sclerosing cholangitis. New drugs in the future will include topical steroids such as budesonide and new immunosuppressive agents like mofetil/mycophenolate. Liver transplantation is the treatment of choice for end stage liver diseases; all autoimmune liver diseases are among the best candidates for liver transplantation. Hopefully, new therapeutic strategies based on the results obtained from experimental models will become everyday clinical practice in the next decade. Therefore this symposium concludes with a discussion.

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" (Histh/Histh) was mapped to a region on Chr 6. Remarkably, Histh is syntenic to the genomic locus most strongly associated with SCLS in humans (3p25.3). Subsequent studies found that the Histh locus is not unique to SJL but additional mouse strains also exhibit Histh phenotype. Considering GWAS studies in SCLS are limited by the small number of patients, we utilized interval-specific SNP-based association testing among Histh phenotyped mouse strains to predict Histh candidates. Furthermore, to dissect the complexity of Histh QTL, we developed network-based functional prediction methods to rank genes in this locus by predicting functional association with multiple Histh-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 Histh. 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 Histh, 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.

Autoimmune Diseases: New Insights for the Healthcare Professional: 2011 Edition

2012-01-09 Autoimmune Diseases: New Insights for the Healthcare Professional: 2011 Edition is a ScholarlyEditions™ eBook that delivers timely, authoritative, and comprehensive information about Autoimmune Diseases. The editors have built Autoimmune Diseases: New Insights for the Healthcare Professional: 2011 Edition on the vast information databases of ScholarlyNews.™ You can expect the information about Autoimmune Diseases in this eBook to be deeper than what you can access anywhere else, as well as consistently reliable, authoritative, informed, and relevant. The content of Autoimmune Diseases: New Insights for the Healthcare Professional: 2011 Edition has been produced by the world's leading scientists, engineers, analysts, research institutions, and companies. All of the content is from peer-reviewed sources, and all of it is written, assembled, and edited by the editors at ScholarlyEditions™ and available exclusively from us. You now have a source you can cite with authority, confidence, and credibility. More information is available at http://www.ScholarlyEditions.com/.