IMMUNOLOGY OF RHEUMATIC DISEASES
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Edited by

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Preface

Recent developments in basic science and clinical rheumatology make it appropriate at this time to create a volume devoted to the immunology of rheumatic diseases. The impact of molecular biology, gene cloning, and new technologies for establishing hybridomas and T-cell lines in the laboratory is now beginning to be felt in clinical medicine. There is a general air of excitement and a feeling that we stand on the threshold of a new era in molecular medicine and clinical science. It is this excitement that we have tried to capture in this book.

This volume is divided into five sections entitled Basic Mechanisms, Autoimmunity, Classical Concepts of Rheumatic Diseases, Pathogenetic Mechanisms, and Therapy. This is not an arbitrary arrangement but represents our belief that from an understanding of basic mechanisms of disease pathogenesis will come new and more successful forms of treatment for the sufferers of rheumatic disorders. We have tried in the selection of authors to choose internationally recognized experts who have both a scientific and a clinical orientation to their subjects. We believe the marriage of clinical and basic disciplines represents the best hope for rapid knowledge transfer from the laboratory to the clinic, where such knowledge can be used to improve patient health.

The section on Basic Mechanisms emphasizes our belief that rheumatic diseases are fundamentally disorders of immunologic regulation based on properties of immune response genes. The five chapters proceed from analysis of the heterogeneity and structure of immune response genes through discussions of their role in immunologic networks, resulting in lymphocyte stimulation, and the production of soluble factors such as the interleukins and interferons. The importance of T-cell subpopulations and natural killer cells is emphasized.

The second section on Autoimmunity focuses on newer aspects of humoral and cellular responses to autoantigens. The selection of topics is based on those responses that appear to have pathogenetic importance and in the study of which the impact of molecular biology is most clearly evident. Four of these chapters primarily concern autoantibodies commonly seen in systemic lupus erythematosus, an indication of the importance of this disorder for understanding autoimmunity in general. Rheumatoid arthritis is represented by new information about rheumatoid factor and the immune response
to collagen. The role of Ia molecules in endocrine autoimmunity is also considered in this section.

The third section concerns Classical Concepts of Rheumatic Diseases and is introduced by a consideration of infectious agents and the various ways that they can directly or indirectly lead to rheumatic disorders. Molecular mimicry and the cross-relatedness of antigens are demonstrated using rheumatic fever as a model. New developments in gout and scleroderma research are considered from the clinical point of view. Consideration of the importance of vasculitis and immune complexes in rheumatic diseases rounds out this section.

Specific Pathogenetic Mechanisms are next considered focusing on events that follow upon the abnormalities of the basic immunoregulatory mechanisms discussed in the first section. Rheumatoid arthritis serves as a model for abnormal immune interactions involving macrophages and dendritic cells, leading to abnormalities of T cells and T-cell factors. The inflammatory cascade and the neutrophil are considered from the standpoint of complement abnormalities, vasomotor lability, and mechanisms of tissue necrosis. The ability of drugs to induce rheumatic syndromes is examined, as is the very important area of psychoneuroimmunology, with its implications for the role of stress in disease mechanisms.

The final section attempts to synthesize all that has preceded it in focusing on new approaches to immunotherapy. These approaches include both immunostimulation and immunosuppression through drugs, plasmapheresis, and total lymphoid irradiation. Obviously, many different experimental approaches are being tried. We are still far from our goal of an established, rational, and specific immunotherapeutic approach to rheumatic diseases based on sound pathophysiological principles. It is to be hoped that this collection of papers on the immunology of rheumatic diseases will mark a beginning and point the way toward a time, not too distant, when this goal will be achieved.

We hope this volume will serve as a source of references to current literature on various aspects of the basic and clinical immunology of rheumatic diseases for immunologists, rheumatologists, physicians, and pediatricians, whether they be academicians or practicing clinicians.

Irvine, California
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Contents

1. BASIC MECHANISMS

1. Human Immune Response Genes
   Gerald T. Nepom and John A. Hansen .................................. 3

2. Lymphocyte Subpopulations: Phenotypic Expression and Functions in Health and Rheumatic Diseases
   Sudhir Gupta .............................................................. 21

3. The Autologous Mixed Lymphocyte Reaction
   Sudhir Gupta .............................................................. 85

4. Interleukins: Molecular and Biological Characteristics
   Sudhir Gupta .............................................................. 109

5. Interferon and Natural Killer Cells in Rheumatic Diseases
   Norman Talal ............................................................... 141

II. AUTOIMMUNITY

6. Rheumatoid Factor
   Sherman Fong, Dennis A. Carson, and John H. Vaughan .............. 167

7. Autoantibodies to Nonhistone Nuclear Antigens: Their Immunobiology and Clinical Relevance
   Gordon C. Sharp and Margaret A. Alspaugh ........................... 197
CONTENTS

8. Antibodies to DNA: Epiphenomena or Pathogens?
   *Bevra H. Hahn* .................................................. 221

   *Ken D. Pischel and Harry G. Bluestein* ...................... 237

10. Antiphospholipid Antibodies
    *G. R. V. Hughes, E. N. Harris, and A. E. Gharavi* .......... 251

11. The Heterogeneity of Autoimmune Responses
    *Marc Feldmann, Deborah Doniach, and Gian Franco Bottazzo* .......... 271

12. Immune Response to Collagen
    *David E. Trentham* .......................................... 301

III. CLASSICAL CONCEPTS OF RHEUMATIC DISEASES

13. Immune Response to Streptococcal Antigens in Rheumatic Fever
    *Ralph C. Williams, Jr.* .................................... 327

14. Infectious Agents in Rheumatic Diseases
    *Frank R. Schmid* ............................................ 367

15. Scleroderma as a Fibrotic Disorder
    *J. Eugene Huffstutter and E. Carwile LeRoy* ............... 397

16. Gout
    *Daniel J. McCarty* .......................................... 425

17. Vasculitis
    *Paul Katz and Anthony S. Fauci* ............................ 465

18. Immune Complexes in Human and Experimental Disease
    *M. Teresa Aguado and Argyrios N. Theofilopoulos* .......... 493

IV. PATHOGENETIC MECHANISMS

19. Cellular Immune Events in the Joints of Patients with
    Rheumatoid Arthritis
    *Nathan J. Zvaifler and Richard M. Silver* .................. 517
20. Macrophages and Dendritic Cells in Rheumatic Diseases  
   Øystein Førre, Kristian Waalen, Jørn Thoen, and Torstein Hovig  .... 543

21. Complement Components in Rheumatic Diseases  
   Peter H. Schur  ............................................................ 563

22. Immune Complexes, Vasoactive Mediators, and Fibrinoid Necrosis in Connective Tissue Diseases  
   Allen P. Kaplan  ......................................................... 581

23. The Role of the Neutrophil in the Inflammatory Response  
   Marilyn C. Pike and Ralph Snyderman  .................................. 619

24. Drug-Related Rheumatic Diseases: Basic Mechanisms  
   Evelyn V. Hess and Allen Litwin  ....................................... 651

25. Psychoneuroimmunologic Contributions to the Study of Rheumatic Diseases  
   Robert Ader  ................................................................. 669

V. THERAPY

26. Immunopotentiators and Rheumatic Diseases  
   Gerard Renoux and Micheline Renoux  .................................... 699

27. Thymic Hormones and Rheumatoid Arthritis  
   J. F. Bach and M. Dardenne  ............................................. 727

28. Plasmapheresis  
   J. R. Kalden  ...................................................................... 741

29. Immunoregulatory Drugs  
   Michael L. Miller and Alfred D. Steinberg  .............................. 767

30. Total Lymphoid Irradiation  
   Brian L. Kotzin and Samuel Strober  ...................................... 793

Index  ..................................................................................... 811
IMMUNOLOGY OF RHEUMATIC DISEASES