THE ANTIGENS

Volume VII

EDITED BY

MICHAEL SELA

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Contributors

Ron N. Apte

Jay A. Berzofsky

Irun R. Cohen

Hugh O. McDevitt

Edna Mozes

Yehuda Shoenfeld

Paul Travers

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MICHAEL SELA
Department of Chemical Immunology
The Weizmann Institute of Science
Rehovot, Israel

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List of Contributors

Numbers in parentheses indicate the pages on which the authors' contributions begin.

RON N. APTE (213), Department of Microbiology and Immunology, Faculty of Health Sciences, Ben-Gurion University of the Negev, Beer-Sheva 84105, Israel

JAY A. BERZOFSKY (1), Metabolism Branch, National Cancer Institute, National Institutes of Health, Bethesda, Maryland 20892

IRUN R. COHEN (307), Department of Cell Biology, The Weizmann Institute of Science, Rehovot 76100, Israel

HUGH O. MCDEVITT (147), Department of Medical Microbiology, Stanford University School of Medicine, Stanford, California 94305

EDNA MOZES (213), Department of Chemical Immunology, The Weizmann Institute of Science, Rehovot 76100, Israel

YEHUDA SHOENFELD (307), Research Unit of Autoimmune Diseases and Department of Medicine 'D,' Soroka Medical Center, Faculty of Health Sciences, Ben-Gurion University of the Negev, Beer-Sheva 84105, Israel

PAUL TRAVERS (147), Department of Medical Microbiology, Stanford University School of Medicine, Stanford, California 94305

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Preface

This is the seventh volume of a comprehensive treatise that covers all aspects of antigens and related areas of immunology, focusing its attention on the chemistry and biology of antigens as well as on their immunological roles and expression. Each chapter covers a particular subject, including both historical background and recent developments. The ultimate purpose of the treatise is to present an integrated picture that will lead to a better understanding of manifold immunological phenomena and of the nature of the immune response.

This volume contains four chapters, the first three of which are devoted to different aspects of the genetic control of the immune response, a most important field of research which has been triggered largely by the availability of synthetic antigens. Investigations in this field are crucial for our present-day understanding of both immunology and genetics. In the first chapter, the author discusses the determinant-specific genetic regulation of the immune response and the genes that control it. The second chapter deals with the molecular genetics of the antigens these genes control, first denoted Ia ("immune response associated") and now called class II antigens. In the third chapter the antigen-specific T cell clones and the specific factors derived from them are discussed. These three chapters present an integrated picture of a fascinating field in which enormous progress has been made in recent years, although some crucial questions are still to be answered.

The fourth and last chapter deals with an interesting approach, linking infection with autoimmunity. The authors also discuss the role of infection in the expression of class II antigens mentioned above. In addition to exploring processes responsible for the induction of autoimmune diseases, the authors suggest a specific therapy for them.

It is a pleasure to acknowledge the whole-hearted cooperation of the staff of Academic Press in the preparation of this treatise.

MICHAEL SELA

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CHAPTER 1

Ir Genes: Antigen-Specific Genetic Regulation of the Immune Response

JAY A. BERZOFSKY

I. Introduction/Definitions

Immune-response (*Ir*) genes are defined as genes which regulate the ability of an individual to produce an immune response, cellular or humoral, against a specific antigen. Specificity is central to this

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