

ADVANCES IN
Immunology

VOLUME 18



ADVANCES IN **Immunology**

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PREFACE

The reviews in Volume 18 deal with subjects ranging from the basic physicochemical changes induced in antibodies by antigens to two important aspects of the control of the immune response: genetic background of the host and antigenic competition to the cellular and humoral events determining immunologic cytotoxicity. The broad scope of this subject matter reflects the ever expanding horizons of immunologic interest and research which continue to contribute importantly to almost every field of biology and medicine.

David L. Gasser and Willys K. Silvers present in the first article a thorough and authoritative consideration of the genetic determinants of immunologic responsiveness. They review both the subject of the Ir genes' determination of specific antibody responses and also less specific genetic influences on general immunoresponsiveness. Finally, the association of various genetic factors with susceptibility to particular diseases, specifically autoimmune disorders and tumors, is critically discussed.

In the second paper, the several forms of cell-mediated cytotoxicity are discussed by Jean-Charles Cerottini and K. Theodore Brunner, whose studies in this field have contributed greatly to our current understanding. The antibody-independent action of sensitized cytotoxic T cells, the antibody-dependent killing by nonsensitized lymphoid cells bearing receptors for the Fc piece, the specific cytotoxicity of macrophages armed by either cytophilic antibody or products of T cell interaction with specific antigen, and, finally, the nonspecific cell killing by macrophages activated by a variety of nonspecific stimuli are presented in terms of the extensive *in vitro* experimental data available. The possible roles of these several mechanisms in the complex processes of *in vivo* rejection of allografts and tumor immunity are discussed.

The important problem of interference and enhancement between two different antigenic challenges is presented by Hugh F. Pross and David Eidinger in the third review. Survey of the literature suggests that a variety of mechanisms may operate at different points in the immune response to produce what the authors term "antigen-induced suppression" and "antigenic promotion." One attractive hypothesis explaining many of these observations is that they result from nonspecific manifestations of normal immunoregulatory phenomena and that products of T cells may well be among the more important immunoregulatory substances which determine the number of antigen-reactive units.

The nature of the critical change in the properties of antibodies upon combination with antigen is discussed by Henry Metzger in the fourth

article. Against a background of information on the structure of intact immunoglobulins and their degraded products, on the characteristics of antigen-antibody complexes, and on the requirements for antigen-induced antibody function, the allosteric and distortive models for antigen action are found wanting and an associative model based upon an approximation of Fc regions is favored. This presentation brings into sharp focus one of the most important steps in the sequence of events leading to significant biological consequences of immunologic reactions.

As a result of the investigations of Karl Erik Hellström and Ingegerd Hellström, it is now clear that the final effect of an immune response on a tumor depends upon the interaction of both cellular and humoral components, which often behave antagonistically. In the fifth paper these authors discuss the evidence for cell-mediated antitumor responses in man and animals in terms of *in vitro* destruction of tumor cells and the means by which tumor cells can escape from immunologic destruction as a result of blocking factors present in the serum. The potential benefit of manipulation of these two immune responses in order to maximize cellular cytotoxicity as a therapeutic approach is considered. The simultaneous operation of cellular cytotoxic mechanisms and humoral blocking factors is not limited to neoplastic disease but apparently is a general phenomenon also occurring in pregnancy, allografts, and chimeras.

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HENRY G. KUNKEL

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