

## BOOK REVIEW - LIVRO\*

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The volume 13 of the Annual Review of Immunology contains twenty-five chapters and retains the task of this series of focusing on recent concepts with clarity of presentation.

The field of Infectious Diseases has been the target for several publications in previous volumes of this scientific series. In 1995, this important area is covered in five chapters. The pathogenic mechanisms responsible for the inflammatory liver disease, and the viral and the host determinants of hepatocarcinogenesis in patients with chronic hepatitis B virus, are only partially defined. In a very clear chapter, F.V. CHISARI and C. FERRARI first review studies that have been made in understanding the immunopathology of hepatitis B virus in infected patients and transgenic mice. The authors also discuss recent evidence that cytokines released by virus-activated lympho-mononuclear cells could play an important role in the clearance of HBV without killing the infected cell. The central finding that has evolved from the experimental infection of inbred strains of mice *L. major* is the association of Th2 development with progressive disease and of a strong Th1 response that ensures the production of macrophage-activating cytokines, particularly IFN- $\gamma$ , with control of infection. S.L. REINER and R.M. LOCKSLEY focus on the relationship of the parasite with its host cell, the macrophage, and the mechanisms by which this relationship shapes the subsequent development of effector CD4<sup>+</sup> T cell. New concepts in the immunopathogenesis of HIV infection are summarized by G. PANTALES and A. FAUCI. In a didactic manner, the authors examine the interaction between HIV and the immune system of the host and the impact that several host factors may exert in causing or influencing the progression of HIV disease. In a very important and interesting paper, S.A. GALEL et al. review the story of blood screening program to prevent HIV transmission via blood supply, and the current status of transfusion with respect to HIV. Finally, the authors consider some of the potential infectious agents for which screening may be indicated in the future, such as presumptive new human retrovirus, possible additional transfusion-transmissible non-A, non-B, non-C hepatitis agents, and *T. cruzi* in non-endemic countries where blood

donors are not screened for this parasite. Animal peptide antibiotics are defined as antimicrobial peptides produced by an animal (including humans), usually with a specificity that is important for the innate immunity of the animal. H.G. BOMAN reviews this up-to-date issue focusing on different groups of peptide antibiotics, antibacterial proteins, mechanisms of action, roles of animal antibiotics in innate immunity, and their future roles as therapeutic agents.

The area of Lymphocyte development, activation and differentiation is examined in five chapters. S.C. JAMENSON et al. describe recent advances in the understanding of the cells, receptors, ligands, and signaling pathways involved in the positive selection of thymocytes. One hundred and seventy four selected references are given with priority to the most recent publications. As pointed out by D.T. FEARON and R.H. CARTER, B lymphocytes must respond to low concentrations of antigen despite having low affinity antigen receptors during the primary immune response. The authors focus on comprehensively how the formation of a membrane protein complex by components of three different protein families, the CD19/CR2/TAPA-1 complex, enables B cells to detect low concentrations of antigen by combining broad specificity with high sensitivity. In the area of lymphocyte survival, S. CORY first reviews the hallmarks of physiologic death (apoptosis), and then compares structural and functional features of the BCL-2 gene family, focusing on its role in the regulation of lymphocyte survival. J.J. MOND et al. first describe the characteristics of T independent type 2 (TI-2) antigens that enable them to stimulate antibody production in the absence of MHC Class II - restricted T cell help. The authors then show evidences that TH-2 antigen are not by themselves sufficient to stimulate immunoglobulin synthesis, focusing on the probable role of cytokines produced by non-T cell and NK cells in the enhancement of antibody production by these antigens. Finally, biophysical and regulatory aspects of lymphocyte potassium and calcium channels and the probable roles of these channels in lymphocyte function are discussed by R.S. LEWIS and M.D. CAHALAN.

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\* Este livro encontra-se na Biblioteca do Instituto de Medicina Tropical de São Paulo.

Four chapters are dedicated to Autoimmunity. Adoptive cellular therapy is defined as the infusion of immune effector cells for the treatment and/or prevention of disease. Insights derived from studies of the pathogenesis and immunobiology of virus infections have resulted in the development of clinical adoptive immunotherapy studies for infections with CMV, EBV, and HIV. In a very comprehensive paper, S.R. RIDDELL and P.D. GREENBERG review the requirements for developing effective adoptive therapy with cells bearing the T cell receptor (TCR)  $\alpha$  and  $\beta$  chains for the treatment of human diseases. The effector responses by which this T cell sub population mediate antiviral activity, and the mechanisms that viruses have evolved to evade these responses are also discussed. Finally, two hundred and forty nine up-to-date references are cited. N.A. MITCHISON et al. summarize current progress in understanding the immunology of reactive arthritis and Lyme arthritis. The authors also discuss the role of infections in generating hypersensitivity, and perhaps autoimmunity, and the development of a vaccine against Lyme disease. R.L. WILDER presents an overview of the neuroendocrine-immune system interactions, and reviews recent concepts as neuroendocrine-immune abnormalities contribute to development of immune system disfunctions, such as autoimmune diseases in experimental animals and humans. Finally, the genetic control of autoimmune diabetes in the non obese diabetic (NOD) mouse is reviewed by L.S. WICKER et al.

The field of Transplantation Immunology includes only an excellent chapter by C. KAUFMAN et al. covering xenotransplantation. The authors review the current clinical experience with xenografts, mechanisms of xenoreactivity, and the induction of tolerance across species disparities. Recent models in which human fetal liver cells have been transplanted into other species, and the development of an "in vivo" model of a functional human immune system in baboons are also discussed.

In the field of Immunogenetics, the three-dimensional structure of the peptide - MHC Class I or Class II complexes, and its implications for antigen presentation are analysed by D.R. MADDEN. In a very interesting chapter, M.J. GRUSBY and L.H. GLIMCHER first review the generation of MHC Class II - deficient mice produced by gene targeting in embryonic stem cell. The authors also discuss the functional consequences of MHC Class II - deficiency in the immune system in autoimmune diseases and infections.

Two chapters in this volume deal with Lymphokines. Interleukin-12 (IL-12) is a proinflammatory cytokine produced mostly by phagocytic cells in response to bacteria and intracellular parasites. G. TRINCHIERI, in his excellent and didactic article, covers current concepts on IL-2 molecule and its receptor, the producer cells of IL-12, the IL-12 requirement for TH1 responses, and its immunoregulatory func-

tions that bridge innate resistance and antigen-specific adaptative immunity. The probable role of IL-12 as a potentiator of cell-mediated immunity in the resistance against various infectious agents is also reviewed in a very comprehensive manner. Finally, J.M. IHLE et al. focus on recent studies that have identified a novel family of protein tyrosine kinases termed the Janus kinases (JAKS) that function in cytokine signaling through the hematopoietic cytokine receptors.

The area of Tumor includes an excellent chapter by D.M. PARDOLL covering paracrine cytokine adjuvants. As pointed out by the author, systemic administration of cytokines, such as IL-2, ignores the paracrine nature of their action, namely, under physiologic circumstances, appropriate lymphokines are produced in high amounts local to the site of antigen. In this chapter, an alternative approach that produces high concentration of cytokines local to the tumor-cells responsible for a strong local inflammatory response and, in some cases, for a potent tumor - specific T cell response is reviewed. Finally, the paracrine delivery of cytokines as a new type of adjuvant in the treatment of patients with cancer is discussed.

Until recently, the identity of the bacterial lipopolysaccharide (LPS) receptor and intracellular signaling pathways responsible for LPS induced cell activation were not known. R.L. ULEVITCH and P.S. TOBIAS summarize recent information on LPS binding protein (LBP) and the receptor CD14, found as a soluble serum protein (s CD14) or as an anchored protein (m CD14) of myeloid cells. Experimental data that support a role for m CD14 and s CD14 in the LPS-induced cell activation are discussed.

Two other chapters in this volume includes recent progress in the biology of super antigens encoded by the mouse mammary tumor virus by H. ACHA-ORBEA and H.F. MACDONALD, and transcriptional regulation of complement genes by J.E. VOLANAKIS.

Finally, the excellent prefatory chapter written by G.J.V. NOSSAL "Choices following antigen entry: antibody formation or immunologic tolerance?" is obligatory to all readers.

Like other publications of the series Annual Review of Immunology, this volume introduces the most recent key observations in a manner that can be understood by readers who are not experts in some fields of Immunology. Therefore it is recommended for posgraduates and researchers who wish to bring themselves up to date on the field of Basic Immunology.

*Myrthes Toledo Barros*  
*Disciplina de Alergia e Imunopatologia do*  
*Departamento de Clínica Médica - HCFMUSP.*