

BOOK REVIEW – LIVRO*

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The volume 10 of the Annual Review of Immunology retains the task of this series of focusing recent concepts with clarity of presentation.

As far as infectious diseases are concerned, P.C. DOHERTY et al. summarize the current status of roles of alfa/beta and gama/delta T-cells subsets in the normal cellular response in virus diseases that lead to the rapid elimination of the pathogen and recovery of the host, with particular reference to lymphocyte choriomeningitis and influenza. The general impression is that CD8⁺ cytotoxic T lymphocytes, CD4⁺ TH1 cells, gama-interferon, and IL-2 are of major importance, with these different components interacting to promote an optimal response. Emerging information on the involvement of gama/interferon T-cells in viral pneumonia is summarized but there is as yet no understanding of the biological significance of these lymphocytes in viral immunity. A. SHER & R. COFFMAN survey current research on T-cell/parasite interactions, placing particular emphasis on those responses thought to play a functional role in immunity or immunopathology of some parasitic infections, and on experimental models that have provided general insights into the mechanisms governing T-lymphocyte induction and regulation. As pointed out by B. BLOOM et al., suppressor T cells are one of the most controversial fields in Immunology. In an extensive chapter, the authors focus on the skepticism about the conflicting characterizations and contradictions of T suppressor cells that lead to the lack of credibility of this lymphocyte subset. The authors also discuss leprosy as a model for unresponsiveness, the evidences for a role of T suppressor cells in this disease and possible mechanisms of suppression involved in its immunopathology.

Much information has been obtained on Clinical Immunology. There are many evidences that the primary demyelination in CNS can be produced by a variety of mechanisms, including metabolic disturbances, toxicities, infection, and autoimmunity. The major human demyelinating disease affecting the CNS is multiple sclerosis (MS). R. MARTIN et al. review the causes of human demyelinating diseases in general and focus on recent studies of MS and the potential implications of recent findings for the pathogenesis and future therapy of MS. In the last few years several approaches have been taken to the identification of some defective genes responsible by a group of five rare human disorders known as X-linked immunodeficiencies. M.E. CONLEY discusses two of these approaches – linkage analyses and X-chromosomal inactivation studies – and reviews new findings of each disorder. In a very interesting chapter, B. DIAMOND et al. review the current state of knowledge on the role of somatic mutation in the pathogenic anti-DNA response.

The field of Immunogenetics has been the target for several publications in previous volumes of this scientific series. In 1992, this important area is reviewed in five chapters. The theme tolerance is discussed in two different reviews. As was predicted by BURNET in his clonal selection theory, the most efficient way to ensure tolerance is the deletion of clones of self-reactive cells. In the case of T cells, intrathymic deletion of self-reactive clones has only recently been demonstrated. Antigens not present intrathymically may, however, influence the peripheral T cell pool in various ways. J.F.A.P. MILLER & G. MORAHAN review the postthymic tolerogenesis and the current status of research on tolerance induced in postthymic T cells encountering antigens synthesized by the body's own cells. C.C. GOODNOW summarizes current progress in understanding the process of self-tolerance in the B-cell repertoire and focuses on key variables influencing the way B cells respond to self-antigens "in vitro". Nowadays it is possible to create mice in which a planned alteration has been introduced at a specific locus in the genome. In a very interesting chapter, B.H. KOLLER & O. SMITHIES demonstrate that this is accomplished by homologous recombination between the targeted genomic locus and DNA introduced into the embryonic stem cells. Finally, two other chapters in the area of Immunogenetics include new insights that have occurred in the field of molecular mechanisms that account for the class-II MHC gene transcription, as well as a complex review concerning the development of T and B cells from stem cells in fetal and adult mice.

In the field of cytokines the reader can learn a lot about Pathophysiology of TNF. As P. VASSALI says in his excellent chapter, "TNF is more than a tumor necrosis factor, more than a cachectin, more than a mediator of shock; much more indeed. Its overall effect is markedly inflammatory". In a first part of the chapter, the author considers the observations made "in vitro", concerning the cell sources, inducing agents, and effects of TNF. In a second part, are discussed the inflammatory reactions produced by TNF administration "in vivo", the harmful effect of TNF in septic shock and malaria, the protective role of TNF in bacterial and parasitic infections, and the involvement of TNF in immunopathological reactions, like graft rejection, autoimmune diseases, cancer, and cachexia. Two hundred and twenty seven selected references are given with priority to the most recent publications. Also A. MIYAJIMA et al. review comprehensively the structure of cytokine and growth factor receptors and the mechanisms by which these receptors couple to signal transduction pathways to promote biological activities.

Three chapters in this volume deal with T lymphocyte receptor. P.A.H. MOSS et al. present an overview of the human T cell receptor, concentrating on the current state of knowledge of the structure and function of the receptor, its repertoire selection by the thymus, and its possible role on the mechanism of initiation and progression of autoimmune diseases. C.A. JANEWAY JR. focuses on the growing evidences that the T cell receptor is a multiprotein signalling machine, and that its protein sub-units are compiled during T cell maturation and T cell antigen recognition to deliver optimal signals leading to the later events. The author discusses also the interaction between TCR and the receptor-associated CD3, the coreceptors CD4 and CD8 and the transmembrane tyrosine phosphatase CD45 to generate optimal signals for T cell recognition. There are many evidences that the interaction of the TCR with its ligand, a peptide in combination with a molecule of the MHC, is a central event in the initiation and propagation of most immune responses to protein antigens. It seems clear that peptides must bind first to MHC molecules before TCR recognition and J.L. JORGENSEN et al. focus on the known parameters of this event and their implications for T-cell recognition.

Tumor immunology is also examined in three chapters. Immune receptor-directed therapy has been applied clinically to an array of human disorders. The new insights concerning the structure and function of lymphocyte cell surface receptors are providing new perspectives for the treatment of human leukemia/lymphoma, autoimmune and GVH diseases, and for the prevention of allograft rejection. In an excellent and very didactic chapter, T.A. WALDMANN summarizes information of the use of monoclonal antibodies, soluble lymphokine receptors, natural receptor antagonists, as well as the use of TCR peptide immunization for immunotherapy. J. URBAN & H. SCHREIBER review tumor-specific mutant proteins in cancer and premalignant lesion in humans, and discuss the potential for the use of these tumor mutant proteins in immunotherapy of cancer. Finally, novel proto-oncogenes revealed by chromosomal translocation within B and T cell malignancies are reviewed by S.J. KORSMEYER.

The area of Transplantation Immunology includes a chapter by Y.Y.L. YU et al. covering the genetics of bone marrow transplantation and the role of NK cells in rejection of bone marrow transplants. In a very interesting review, A.S. ROSENBERG & A. SINGER discuss the phenotype, specificity, and function of T cells mediating rejection responses against skin allografts, and review immune mechanisms by which T cells are either activated or rendered non-responsive by cellular populations within the graft.

In the field of Immunoglobulin and B cell receptors, M. RETH summarizes current knowledge of the structure and functional properties of B cell antigen receptor. Also the approaches to the "in vitro" production of antibodies by genetic engineering and expression systems, and the perspectives of their application are reviewed by S.L. MORRISON.

There are many evidences that cell death in the mammalian body occurs in a highly ordered sequence of events, which are known to be genetically programmed. The morphology of programmed cell death is called apoptosis. Interesting, the term apoptosis itself is derived from the ancient Greek word used to describe the falling of leaves from trees or petals from flowers. The pathways by which apoptosis is triggered vary from cell to cell type and from inducer to inducer, and some of them are discussed by J.J. COHEN et al.

L.J. PICKER & E.C. BUTCHER describe mechanisms thought to control the homing of lymphocyte populations "in vivo", focusing in particular on the adhesive interactions involved in lymphocyte-endothelial cell recognition and in the selective extravasation of lymphocyte population into secondary and tertiary lymphoid tissues. H.R. COLTEN & F. ROSEN review human complement deficiencies with emphasis on molecular basis of some of them like deficiencies of complement proteins C1, C2, C3, terminal components (C5-C9), C1-inhibitor, factor I, DAF, and complement receptors Type 3 and Type 1. In a very comprehensive chapter, N.H. SIGAL & F.J. DUMONT review the potent immunosuppressive drugs Cyclosporin A, FK-506, and Rapamycin as pharmacologic probes of lymphocyte signal transduction. Finally, the excellent forestry chapter written by N.A. MITCHISON regarding specialization, tolerance, memory, competition, latency, and strife among T cells 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 postgraduates and researchers who wish to bring themselves up to date on the field of basic Immunology.

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