

# Preface

As we entered the twenty-first century, major advances in the arena of recombinant DNA, hybridoma and transgenic technologies had not only revolutionized the understanding of the etiology and pathogenesis of a number of debilitating and life-threatening diseases, but also provided novel modes of treatment. Whether it is the clinical application of recombinant cytokines, their agonists or antagonists, monoclonal antibodies, regulatory T cells, gene therapy or the concept of T cell vaccines, all these require understanding of an evolving discipline that worked on the interface of immunology, pathology, pharmacology and genetics called Immunopharmacology. The initial emphasis of the discipline was the development of the drugs that suppressed immune response to prevent tissue rejection after organ transplantation. The field once considered restricted only to protect the host from invading organisms by mounting immune and inflammatory responses evolved exponentially as we gradually learned about the exciting and sometimes adverse role of the products of the immune response in a very wide range of physiological and pathological settings ranging from cardiovascular, pulmonary, gastrointestinal to neurological function. A number of these products and therapies based on their understanding not only continue to become symptomatic and curative therapeutic agents but have extensively contributed to the early diagnosis of a number of dreadful disorders.

This book is written for graduate students in pharmacology and professional students in pharmacy and medicine. The introductory chapter is aimed for the students who have not previously taken a course in Basic Immunology. The Chapters 2 and 3 focus on cytokines, their receptors, pharmacology and clinical applications. The next section is devoted to the pharmacology of immune regulatory agents, monoclonal antibodies and etiology and mechanisms of IgE-mediated responses and immunotherapy for allergic disease. The following section includes chapters on the mechanisms of allograft rejections with description of the requirements for different types of clinical tissue transplantation and immunological basis of acquired immune deficiency disease. In the chapter on AIDS, the emphasis has been on the life cycle of HIV, available therapeutic options and the difficulties associated with the development of a vaccine for AIDS and why an HIV vaccine

does not fit the paradigm for the classical vaccine development. The last part of the book includes chapters on regulatory T cells and their therapeutic potential followed by the last chapter on the challenges and use of gene therapy to treat human disease.

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