

Immunological Tolerance: Methods and Protocols. Methods in Molecular Biology, Vol. 380

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As the title of the book implies, this volume brings together a number of chapters that outline methodology in relation to immunological tolerance. It is a highly specialised volume with much to contribute to this area of immunological research. The book is published following recent advances in the field, at a time when it seems likely that such advances hold out real possibilities for treating autoimmune diseases, which affect so many people worldwide. Thus, the purpose of the book, as outlined in the preface, is to provide a guide to the techniques used currently for culturing and characterising the cells responsible for self tolerance.

This is a multi-author book divided into four sections after the introductory chapter. Each chapter follows a similar style, beginning with a summary, and has extensive in-text referencing, predominantly to post-2000 publications. Most chapters include detailed protocols that will be invaluable to workers in the field, although they don't make for exciting reading for the uninitiated!

The first section deals with the cell types that contribute to immunological tolerance. This section comprises six chapters that deal principally with the methodology relating to dendritic cells and T lymphocytes. This includes their differentiation from embryonic stem cells and the culture and characterisation of thymic epithelial cell lines. The

second section focuses on the study of immunological tolerance *in vitro*. Eight chapters discuss and provide methodology for the study of tolerance and include thymus organogenesis and culture, gene expression in dendritic cells using microarrays, serial analysis of gene expression, and analysis of immune cells in three-dimensional collagen matrices.

The third section looks at the study of immunological tolerance *in vivo*. In this section, eight chapters cover the aetiology of autoimmune disease and provide methodology relating to animal models of spontaneous autoimmune disease (e.g., experimental autoimmune encephalomyelitis and inflammatory bowel disease) and transplantation tolerance. Further chapters relate to imaging of T-cell priming and tolerance in the lymph node and to the use of fluorescence-labelled cells to trace tolerance *in vivo*.

The final section of the book details methods for inducing and breaking immunological tolerance. This is covered in six chapters that look at thymic involution and allogeneic bone marrow transplantation (these chapters do not have detailed protocols), induction of tolerance using monoclonal antibodies, adoptive transfer by regulatory T cells, derivation of exosomes from dendritic cells, and the *in vivo* manipulation of dendritic cells to break self tolerance to tumour-associated antigens.

Several chapters provide reviews of relevant areas that will be useful for those who wish to catch up with this highly complex subject. However, the greatest benefit will be as an excellent reference work and practical guide for those already working in this field, or for those who are just entering the field.

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