Molecular defence

Andrew McMichael

Antibodies: Their Structure and Function.

By M.W. Steward.

Chapman & Hall/Methuen: 1984. Pp. 96. Pbk £3.50, \$7.50.

Introduction to Molecular Immunology, 2nd Edn.

By Alfred Nisonoff.

Sinauer/Blackwell Scientific: 1984.

Pp. 236. Pbk \$14.95, £12.80.

Molecular Immunology: A Textbook.

Edited by M. Zouhair Atassi, Carel J. van Oss and Darryl R. Absolom.

Dekker: 1984. Pp. 725. SwFr. 129, \$47.

IN THE past few years recombinant DNA technology has made a tremendous impact on our understanding of the immune response. This revolution is still accelerating as the T cell receptor, differentiation antigens and lymphokines are cloned and sequenced. Textbooks on "molecular immunology" appearing now — and written a year or two ago — are thus in danger of appearing outdated to those whose imagination is caught by today's excitement. At the time these three books were prepared, however, the new technology had been applied to antibodies and MHC antigens. So readers should not be disappointed, because these structures lie at the heart of the discipline.

The most concise and aptly titled of the three books is Steward's *Antibodies: Their Structure and Function*. The perspective is biochemical, with a clear and detailed account of the structure of immunoglobulins. The functional properties are discussed at the level of the antibody molecules, with equal attention being given to their ability to bind antigen at one end and to trigger secondary events at the other. The nature of the antigen binding is discussed particularly well and is the book's strongest point. Less attention is given to molecular genetics, although the essential features are covered. This is a solid and well written book, suitable for undergraduate biochemists or immunologists. It should serve as a good introductory text and has a plentiful bibliography.

Nisonoff's *Introduction to Molecular Immunology* is a superb book. It concentrates mainly on immunoglobulins and takes the reader carefully through the antibody molecule, from its binding properties to primary and three-dimensional structure and on to genetic control. Starting from first principles, including a brief description of the cellular background, it should be fully comprehensible to most biologists. The clarity of the text is not the result of over-simplification and the reader is taken up to the front line in research as it was in January 1984. The illustrations are good and always help to clarify the text.

This is the second edition of an already

successful book and author and publisher are to be commended on the rapid appearance of the updated version. The new edition has been expanded by extensive rewriting of the chapter on complement and inclusion of a new chapter on the major histocompatibility complex. The latter is written with the same emphasis on biochemical and genetic information and has a brief introduction to explain why the MHC is important. This book will appeal to students at all levels, making an excellent introductory text for undergraduate courses and a useful revision text for those of us who have not followed this literature closely. I look forward to the third edition, hoping that new chapters on the T cell receptor, differentiation antigens and lymphokines will be added and explained with the same clarity.

Molecular Immunology, a multi-author work, is aimed at graduate courses and is much broader in scope than the two books discussed above. Unfortunately it seems to have taken longer to appear and recent advances make it look somewhat dated. The best parts of the book are the extensive (139-page) discussion of antigens and the following section on antibodies. The discussion of antigens is made up of several

interesting chapters, although some have a rather narrow perspective — for instance, Atassi exclusively describes his own work on defining antigenic epitopes on myoglobin, lysozyme and haemoglobin — while the section on antibodies is less detailed than that found in the other two books. Fearon's chapter on complement, however, is one of the best short descriptions of this topic that I have seen.

The section on cellular immunology lacks molecular information and may seem to overemphasize phenomenology, but it should be realized that most of the new discoveries are confirming and explaining the observations of traditional immunology. There are several chapters on methodology, with a particularly good section on electron microscopy by M.A. Gonda (though I was surprised there was only a brief description of flow cytometry in the account of cell separation techniques). The balance of this book is rather different to the other texts, and it should therefore form a useful addition to library collections. □

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Tackling immunity

Brian Solomon

Essentials of Immunology.

By W.H. Hildemann.

Elsevier: 1984. Pp. 146. Dfl. 60, \$19.50.

Immunology: An Introduction.

By Ian R. Tizard.

Holt Saunders/Saunders College: 1984.

Hbk £21, \$31.95; pbk £7.95.

CHOOSING an original title for a book on basic immunology must nowadays be a thankless task. Unfortunately, *Essentials of Immunology* is too similar to the title of the well-established *Essential Immunology*, by Ivan Roitt, which is very different in style. In his preface the late Bill Hildemann suggested an alternative title of *Immunology in a Nutshell* and after reading the book I consider that this would have been much more appropriate.

The book's stated origins lie in a lecture course for medical and science students in the health sciences. This probably explains why the text resembles lecture notes and there is a heavy reliance on diagrams and complex tables. There are some paragraphs where there is a true flow of words, but usually facts are given in a jerky note form and the reader is soon referred to a table or figure for more information. With such a sparse text, generalizations have had to be made, inevitably so, but some are dangerously misleading. For example, the process of opsonization is not "complement-dependent" (for IgG) but IgM will only function as an opsonin when bound

with C1q; the Chediak-Higashi syndrome is chiefly notable for a deficiency of natural killer cells; and the propensity for immature B cells to be driven into tolerance by antigen (a strong teaching point) is not even mentioned.

Although the book concentrates on human immunology there are sudden switches to mouse or chicken experiments without warning. This occurs particularly in the "Overviews" at the end of each chapter. For example, the statement "that fetal and newborn mammals acquire passive immunity by placental passage of IgG and by assimilation of sIgM and sIgA from the colostrum" is bound to confuse medical students.

As a cellular immunologist, the author regards immunoglobulins as "ancillary to cell-mediated immune functions", and the sheer magic of the widely different biological functions of the various immunoglobulin classes is lost in a massive table. There is only one paragraph on ontogeny, while considering Bill Hildemann's enormous contribution to research on immunorecognition in invertebrates it was also disappointing to find only two short paragraphs on phylogeny with one unnecessary table and another with misleading information. In short, I found too little nut inside the nutshell.

In Ian Tizard's *Immunology: An Introduction*, the reader is struck at once by the confidence of the author's writing. Many grey areas of my knowledge were dispersed by this book. At the same time, newcomers to immunology will find all their basic requirements for getting to grips with the subject. The opening chapters follow a