

*Parasitic nematodes – antigens, membranes and genes.*

Edited by M. W. KENNEDY. Taylor & Francis, London. 1991. 243 pages. Price £39.00. ISBN 0 85066 7720.

Although the title of this book suggests that it contains most things that one would ever want to know about parasitic nematodes, all within 243 pages, this is not the case nor was it the intention of the editor. Instead, as is stated in the introduction, its aim is to provide 'a cross-section of the immunological, biochemical and molecular biological research currently being undertaken on parasitic nematodes'. In this respect it succeeds. Research on parasitic nematodes is in many ways in the shadow of the extensive information available on the free-living nematode *Caenorhabditis elegans*. Parasitic nematodes are more interesting because their habitat is usually a vertebrate host. How they manage to achieve this, how the hosts try to protect themselves and the resulting pandemonium of antigens, antibodies and disease are the predominant directions of research into parasitic nematodes. Because many of these organisms are significant parasites of man, studies are largely concentrated on such pathogens. The book follows this bias and deals with various aspects of biology, diagnosis, pathology and epidemiology of parasitic nematodes. Because these organisms stimulate immunological reactions most of the aspects discussed have the prefix 'immuno'.

There are a number of themes apparent in this book, many of which were taken up in various chapters, and which should be the aims of future research. In particular it is quite clear that there are significant immune reactions (although cellular responses need to be further investigated) to nematode infections. These reactions are ineffective by virtue of the fact that a feature of nematode infections is their chronicity. A challenge for the future must be to make the link between these observations and the parasite's strategies for surviving them. However, it is the last chapter (eleven) which addresses a point which I believe puts the whole of this book into perspective. This chapter deals with the variation of individual host immune responses to nematode infections. Understanding this individual variation will be essential before successfully approaching these tenacious creatures.

As to the contents of the book itself, it is a multi-authored volume of eleven chapters. Most chapters are clearly written and the sensible use of sub-headings divides most chapters well. For the sake of convenience I have grouped the chapters by parasite (or life-style), rather than in the order in which they appear. The first chapter, the most clearly written of the book, deals directly with the biophysical nature of the nematode surface, which is a highly dynamic structure as shown both in its change when an infective stage enters a host and during its residence in

the host. Chapter 4 deals with collagens – a major component of the nematode cuticle – and describes them mainly in comparison to those known from *C. elegans*. Chapters 2, 3 and 10 all deal with lymphatic dwelling nematodes. Chapter 2 describes the various cuticular proteins found in these nematodes. Following on from this, chapter three deals in detail with an immunodominant molecule of one of these genera (*Brugia*): a molecule that seems to be common to all lymphatic filarial worms. The biochemical nature of this molecule and the humoral immune response to it are discussed. Attention is rightly drawn to the absence of information about the T-cell response to this antigen. Chapter 10 concentrates exclusively on approaches to diagnosis (mainly immunodiagnosis) of *Onchocerca volvulus*, the aetiological agent of river blindness. Approaches are described for specific detection of antibodies to *O. volvulus*, the possibility of antigen detection and the use of DNA probes to detect larval stages in insect vectors.

Chapters 5 and 8 continue with these general themes, but this time in respect to gut-dwelling nematodes. Chapter 5 describes the dynamic nature of the nematode cuticle and the synthesis and replacement of molecules on the cuticle. Chapter 8 deals with hookworms and discusses the potential for diagnosis and for the identification of potential protective antigens in relation to possible control strategies and to immuno-epidemiology. Chapter 9 concentrates on parasite enzymes (acetylcholinesterase, proteinases and superoxide dismutase) and their potential for immunodiagnosis. Chapters 6 and 7 are concerned with *Toxocara canis*. These chapters bring together immunobiological studies of this parasite and in relationship to diagnosis and to disease. The former chapter considers secreted glycoconjugates and shows how these can be used for immunodiagnosis and also speculates on how the parasite employs these molecules to divert the immune system. This line of thought is continued in the later chapter which also describes the immunopathology of these infections.

In conclusion, the book provides a useful cross-section of current research on parasitic nematodes and will be mainly of interest to those working or about to start working in this broad field.

M. E. VINEY

*Department of Genetics  
University of Edinburgh*