M.W. Kennedy, W. Harnett (Eds.): Parasitic Nematodes: Molecular Biology, Biochemistry and Immunology. CABI Publishing, Oxon and New York, 2001. ISBN 0-85199-423-7, hard cover, 496 pp. Price £75.00 (US\$140.00).

Parasitic nematodes cause various diseases not only to humans but also to domestic animals and crop plants. The resulting health and economical damage is a huge concern all over the world. The field of nematology has been traditionally divided into three branches: animal-parasitic, plant-parasitic and free-living. This book presents a concept that the fundamental mechanisms of parasitism by nematodes are catholic and thus the divided branches should be able to learn from each other. The recent development of molecular, biochemical and immunological tools is amazing and promises to disclose the mechanisms of parasitism. Authors of this book took the challenge to address the current understanding of parasitic nematodes at the molecular basis.

The book is composed of five parts and further divided into 21 chapters. Part I, *Genetics and Phylogeny*, shows the usefulness of molecular analysis for the study of nematode evolution. It presents an interesting point of view on the evolution and a potential cue to disease treatments through *Wolbachia*, the intracellular symbiotic bacteria of filarial nematodes. Although identification of nematodes using their morphological features, the host they infect, their transmission patterns and their pathological effects is essential, it is not sufficient to determine all the genetic background. R. Gasser explains in detail the principles and gives useful molecular protocols for the study of genetic variability. In the following chapter, *Strongyloides ratti* is suggested as a model for molecular characterisation of the well-studied phenotypic changes it undergoes in response to diverse physical and immune environments.

Part II, *Host Modulation and Manipulation – Making Themselves at Home*, addresses the interaction between hosts and parasites, exemplified by *Trichinella spiralis*, the root-knot (*Meloidogyne* spp.) and the cyst (*Globodera* and *Heterodera* spp.) nematodes. It is interesting that, in both animal and plant parasites, worm invasion affects the cell cycle and gene expression of the host tissue. The range of adaptations worms use to overcome the host defence from morphology and developmental cycles to production of protective reagents is discussed in this section. The concept of the evolution of parasitism emphasizing horizontal gene transfer as suggested by D.McK. Bird and A.F. Bird is also appealing.

The above mentioned ability of parasites to produce various materials and enzymes allows them to sneak through the immune barrier of hosts. Part III provides updated information on these *Specialist Products and Activities*. The descriptions by A.P. Page of cuticle structure and collagen biochemistry are of great interest to those including myself, working on the sterol-dependent mechanisms that control moulting through a cascade of nuclear receptors in *Caenorhabditis elegans*. The role of chitinases in filarial nematodes, acetylcholinesterases, the surface glycoproteins of *Toxocara canis*, and various antigenic proteins isolated from nematode gut are also reviewed. It is suggested that these

studies will serve not only our understanding of the nematode development, but also future medical applications such as tissue transplantations and vaccine development. Metabolism and gene expression of the pyruvate dehydrogenase complex during the development of *Ascaris suum*, analyses of glycoconjugates in different species of nematodes, and important aspects of lipid-binding proteins are also illustrated in Part III.

Part IV, entitled *Immunology and Immunomodulation*, is focused on the immune response of mammalian hosts against intestinal nematode infection. Studies of T helper cell cytokine responses, phosphorylcholine function in immunomodulation, and genetic analyses of the relationship between protective and pathological immune responses utilising knock-out mice described here will be important to develop rational immuno-therapies. The last part, *Neurobiology*, contains descriptions of neuropeptides involved in intercellular signalling and an introduction to the membrane ion channels and electro-physiological techniques in nematodes.

Each chapter is ended by "Concluding Remarks" and it is very helpful to digest the notion of the authors. The book provides access to all colour illustrations on the web sites (http://www.cabi.org/Bookshop/book_detail.asp?isbn=0851994237

and <http://www.gla.ac.uk/Acad/IBLS/II/mwk/res/images.html>). This greatly assists proper understanding of the figures. The index at the end of the book is carefully organised and helpful.

It should be noted that many of the authors of this book recognise the value of the modern genetic research on *Caenorhabditis elegans* as extremely important. Although *C. elegans* is not parasitic, it enables a breaking progress in biology and yields substantial information that will also apply to parasitic nematodes.

This book is an excellent overview of various aspects on parasitic nematodes given by active experts in the field. The focus is the molecular basis of both plant and animal parasitism, expanded by the contribution of knowledge from the free-living *C. elegans*. This book is rather unique and worthwhile because it views all three nematology fields and addresses the basic biological problems. The book was meant for advanced students and researchers in human and veterinary parasitology, plant nematology and immunology, and is indeed a superb reference for a broad audience. Utilising the molecular approach is relatively new in this field but it is indispensable for the future to understand how parasitism works and evolves and how to develop strategies to fight against harmful nematodes or reduce their impact.

This book also happened to be a memorial edition for the great scientist Dr. Alan Bird (Chapter 8), who unexpectedly passed away. He was among the first to show the mutual connections between the divided fields. His idea on this matter should be continued to see the growth of this area of research.

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