Book Review

Parasitism. The Diversity and Ecology of Animal Parasites, 2nd edn. By Timothy M. Goater, Cameron P. Goater and Gerald W. Esch, editors, p. 497. Cambridge University Press, UK, 2014. ISBN: 978-0-521-12205-4
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There are surprisingly few good, up to date books, on Parasitism. This is one of the best. The headline of this review is that *Parasitism* is very readable, extremely well illustrated and keeps the reader right up to date. The feel of the book leans towards the evolution and ecology of parasites but it does not ignore functional interactions and basic biology. The authors are highly experienced parasitologists and have clearly invested a good deal of care and thought in the way they have presented the material, ensuring a lucid, coherent approach.

Typically parasitology books are either set out in a taxonomic manner, with group by group coverage, or they follow a more functional approach and use example parasites within the functional context. This book combines both. The book sandwiches a group by group approach between chapters that cover fundamental principles. In the 'filling' of the sandwich, we are taken through each group in a similar way with a focus on understanding the commonalities as well as the diversities with the group. A generally consistent pattern of subsections leads us through these chapters: 'General Considerations'; 'Form and Function'; 'Development and General Life Cycles'; 'Biodiversity and Life-cycle Variation'; 'Phylogenetic Relationships and Classification'. In the more complex parasites, there is the additional inclusion of a section on 'Nutrient Uptake and Metabolism'. In a couple of these chapters where the diversity is more complex (Flatworms and Arthropods), each chapter is broken down to cover subgroups. Each of the chapters, throughout the book, is well illustrated with photographs and diagrams which are used to complement the text. A set of colour plates, at the centre of the book, provides dynamic images of those aspects of parasitology that benefit from colour. Within each chapter, a series of detailed example studies, set in boxes are used to illustrate and bring key points to life. So the overall layout of the book is consistent, easy to navigate and well set out.

The book starts out with two chapters that set the scene. The 'Introduction' defines parasitology and introductory concepts and this leads onto the second chapter on 'Immunological Aspects of Parasitism'. This chapter gives a concise introduction to the key principles – with a useful level of detail, without being a treatise on immunology. This chapter includes some detailed examples of parasite interactions (includes schistosomes, Malaria and trypanosomes). Chapters 3–11 tackle each group of parasites: Protista; Microsporidia; Myxozoa; Platyhelminthes; Acanthocephala; Nematoda; Nematomorpha; Pentastomida; Arthropoda. To help get the feel of these chapters, I will focus on just one (Chapter 3, Protista, 40 pages).

'Protista: The Unicellular Eukaryotes', is a well written chapter that covers all of the key groups showing both the relationships between parasites and also describing the features that differ. For example, diagrammatic representations of a generalized apicomplexan merozoite and a generalized apicomplexan life cycle show clear commonalities between parasites within this group. The text is then used to identify differences between key examples. The flagellates get the same treatment. Diagrams showing common and unique features of the morphology of flagellates are supported by text that also draws comparisons. This style of treating parasite groups is quite engaging because it encourages the reader to think about the context of the morphology or life cycles. I am sure this will aid student learning because principles and relationships are explained rather than being bombarded with what, to the uninitiated, must seem like many unrelated life cycles. Some parasites get a more in depth treatment. This includes an excellent set of photos and accompanying material on the diagnosis of malaria. The information contained in the chapter contains up to date material as well as covering traditional concepts that do not change with time. To judge the accuracy and relevance of the text, I sampled trypanosomes and *Toxoplasma* as organisms I am very familiar with. These were covered in sufficient detail in a manner that was clear and engaging. The information supplied was extremely accurate and the simplification and prioritization of detail, necessary for a text like this, did not allow the text to stray into inaccuracy. As someone, who regularly teaches undergraduate students about these parasites, the content was well judged and would be suitable for my students. The chapter was well referenced with 86 references ranging from books to primary papers. These were well chosen as supportive reading.

The remaining chapters of the book (12–17) encompass broader topics: Parasite Population Ecology; Community Ecology; Biogeography and

Phylogeography; Effects of Parasites on their Hosts; Evolution of Host–Parasite Interactions and Environmental Parasitology. These chapters are well written and cover these key themes while drawing on examples of parasites from across the groups. This approach of tackling broader themes provides an engaging way of understanding the context of parasites within the wider global ecosystem. I would thoroughly recommend this book.

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