

Preface

The history of research on the relationships between *Biomphalaria* spp. and larval trematodes, particularly *Schistosoma mansoni*, is long, active, and ongoing today. Snails of the genus *Biomphalaria* are of significant medical importance with many species living in freshwater habitats associated with human settlements; many of these snail species are obligate intermediate hosts of the human blood fluke *S. mansoni*, the causative agent of hepatosplenic schistosomiasis. This parasitic disease continues to disrupt the lives of about 200 million people in over 70 countries and prevents these individuals from otherwise reasonable expectations of healthy and productive lives. Furthermore, it is estimated that within the developing world, especially in sub-Saharan Africa, more than 700 million people are at risk of becoming infected, despite the efforts to control transmission in human and snail populations by mass chemotherapy and the use of molluscicides. Several factors, such as the absence of a schistosome vaccine, the recent appearance of resistance to antischistosome drugs, and human activities that expand snail habitats, have increased the need for a better understanding of schistosome-snail interactions. In recent years, the application of new technologies has contributed to the accumulation of considerable new information on this topic that may be of great use to biomedical scientists.

In addition to the impact of *Biomphalaria* spp. on public health, these snails are also interesting models for the study of other topics such as population biology, including genetics and demography, proteomics, invertebrate immunobiology, mating systems, and biogeography, among others. *Biomphalaria* spp. snails have been extensively used as experimental biological models contributing significantly to new developments in many areas studied by biomedical scientists. Extensive coverage of these topics is included in this book, also considering trematode species other than schistosomes.

The aim of the present book is to provide an overview of the recent advances in the *Biomphalaria* spp.-larval trematode interactions, especially in *Biomphalaria*-schistosome systems. Emphasis is placed on gaps in our knowledge that must be filled to gain a better understanding of the relationships in these host-parasite systems. This may be critical for a deeper knowledge of the transmission of schistosomiasis and other snail-borne parasitic diseases.

The list of chapters includes basic information as well as new topics. All chapters are covered from a modern point of view, considering the new information that has accumulated by the application of novel techniques and analyzed in a contemporary context. In summary, the main goal of this book is to present *Biomphalaria* spp. and their interactions with larval trematodes in the context of modern biology and to provide an update of the current status of knowledge on these host–parasite systems.

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