

PREFACE

The first comprehensive treatment on the physiology of molluscs was published in two volumes, edited by K. M. Wilbur and C. M. Yonge in 1964 and 1966. Almost 20 years later, a landmark compendium in multiple edited volumes on the biology of molluscs was published between 1983 and 1988. This series dedicated two volumes (volumes 4 and 5) to review papers on molluscan physiology. K. M. Wilbur was the editor-in-chief of this important series. The volumes in 1964 and 1966 and those in the 1980s were all published by then Academic Press.

The only review series on selected aspects of molluscan physiology since the 1980s was a special volume of the *Canadian Journal of Zoology*, published in 2013, which was edited by Saber Saleuddin. As luck would have it, we were approached by Apple Academic Press in 2014 to edit another volume dedicated to molluscan physiology, which we enthusiastically agreed to undertake.

With the rapid development of cutting-edge proteomic, molecular biological, and cellular imaging techniques, our understanding of molluscan physiology, specifically in the areas of neurobiology, reproductive biology, and shell formation, has increased exponentially over the last several years. Therefore, we felt that compiling an edited volume of review papers was warranted, and we hope that this book will serve as an important resource for researchers, professors, and students.

Editing a review series is a daunting task. The major challenge of such an endeavor is not what areas we could cover but how to deal with topics where we were unable to find excellent contributors. Thus, the titles and areas of research included in this book are our personal choices based on availability of contributors and their willingness to write within the allotted time frame. Furthermore, in certain fields of physiology, such as osmoregulation and defense mechanisms, we felt that the fields have not advanced significantly enough to warrant reviews. To partially compensate for not covering certain fields, we have included two papers previously published in the *Canadian Journal of Zoology*. The only instructions we gave to contributing authors is that the coverage be comprehensive, with a brief introduction, present knowledge highlighting the significant recent findings, and finally, provide suggestions about future directions in the context of recent developments.

We are indebted to friends and colleagues around the globe who have kindly contributed to this volume. During the months of writing, rewriting, and editing, the authors have been unfailingly cooperative in all we have requested them to do. We gratefully thank the appraisers who provided an immense service by providing critical appraisal and evaluation of each paper. Each revised paper was so much better following the evaluation reports. The fact that this service is given freely attests to the generosity of our colleagues.

We had expected that a single volume should suffice, but as the project developed it became apparent we needed two volumes. In grouping papers for the two volumes, we tried to ensure that the majority of papers in each volume complemented each other and were aimed at specific readers. Thus, Volume 1 is on shell structure, mineralization, the dynamics of calcium transport, shell drilling, byssus proteins, locomotion, and reproduction. Volume 2 includes reviews on the neural mechanisms of learning, reproductive behavior, responses to environmental stress and hormones, and neurotransmitters. We believe that the reviews included in these two volumes make a significant contribution to our understanding not only of molluscan physiology but also the physiology of animals in general.

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