

BOOK REVIEW

Protistology by Klaus Hausmann, Norbert Hülsmann and Renate Radek with contributions by Hans Machemer, Maria Mulisch and Günter Steinbrück, 3rd edition, E. Schweizerbart'sche Verlagsbuchhandlung (Nägele u. Obermiller) Stuttgart, Germany; ISBN 3-510-65208-8 hardcover € 64.-/ U.S. \$ 78.-, and ISBN 3-510-65209-6 € 49.-/ U.S. \$ 59.- student edition.

Unicellular organisms with the eukaryotic type of cell organization, known today as protists have been at the forefront of biology since their discovery by Anthony van Leeuwenhoek at the end of 17th century. Their seemingly simple cellular organization, possibility of cultivation of many of them in simple media, their wide occurrence in nature made them in the past the classical experimental material of biologists of many demoninations.

Even in contemporary biology, preoccupied with molecular, biochemical and developmental aspects of organisms, protists have not lost their standing as key organisms in many areas of biological and medical research. The origin of the eukaryotic cell, the history of its evolution into representatives of today's five generally recognized kingdoms of organisms (Protozoa, Chromista, Plantae, Animalia and Fungi) is the area where protists play a basic role. The relatively recent discovery by methods of molecular biology of nanosized protists as widely distributed organisms now calls for their morphological characterization, evolutionary and taxonomic affiliation and for the evaluation of their importance in ecosystems. These two examples (and many others could be mentioned) confirm that today protistology is not a mere remnant of its past glory but an integral part of modern biology. Several animal and human diseases caused by protists are still with us in the 21st century (malaria, toxoplasmosis, amebiasis, leishmaniasis, trypanosomiasis, etc), a reality stressing the practical importance of protists.

Although it is evident that protists are organisms deserving study, it is paradoxically difficult to find a textbook on protists which would be modern and comprehensive. Modern informations on protists are scattered throughout specialized publications and journals in many fields of biology. The last textbook before that considered in this review was published nine years ago, a long time if one considers the precocious development of today's biology. Thus the "Protistology" by Klaus Hausmann, Norbert Hülsmann and Renate Radek and their colleagues is a very welcomed addition to biological literature. It is in fact the only presently available textbook intended to introduce the reader (be it a student, an advanced scientist or an amateur in the best sense of the word) to the world of protists. Although the present volume is the third edition of a highly successful textbook of the past, it is a novelty as it covers not only protozoa dealt with in the preceding editions ("Protozoologie" in 1985 and "Protozoology" in 1995), but also the single celled representatives of other organismal kingdoms.

The book is organized in three parts: a "general part", a "core part" (evolution and taxonomy of protists) and a third part (selected topics of protistan organization, evolution, morphogenesis, molecular biology, behavior and ecology). A glossary and an extensive list of bibliographical references to journals, textbooks, monographs and important articles on individual protist groups are a much welcomed addition to the book.

The general part covers the cellular organization of protists and contains a short but very informative chapter on the historical aspects of protist research and its contribution to biology in general.

When updating the former Protozoology from 1995 and transforming it into the "core part" of Protistology of 2003, the authors had a not an easy task. Not only it was necessary to include information on many unicellular organisms not previously covered (e.g. green algae, some chromists, fungal protists), but to arrange them into a kind

of system which would be “user’s friendly” and phylogeny oriented. For that purpose the authors have selected a consensus tree based on combined protein sequences and thus having chance to reflect true relationships among organisms. The phylogenetically related protistan groups are presented in the book as phyla of a single organismal realm, protista. Thus the division of organisms into traditional kingdoms is avoided, reflecting perhaps the modern thinking that protists, although a polyphyletic assemblage, nevertheless represent a kind of entity by virtue of their size and level of organization. Each phylum is then presented by description of several of its representative organism, accompanied by photomicrographs and schematic drawings.

The third part, “Selected Topics of General Protistology” is an assemblage of diverse topics as “Comparative Morphology and Physiology of Protists”, “Nuclei and Sexual Reproduction”, “Morphogenesis and Reproduction”, selected molecular biology topics, “Behavior of Protists” and Ecology of Protists.

The main character, permeating the whole book is the illustration material of high quantity and quality consisting of photomicrographs and drawings (many of them by the authors). I consider this as an outstanding paedagogic feature of the book, a feature perhaps reflecting the tradition of German protistology which produced in the past some outstanding and still usable textbooks as e.g. the classical Doflein Reichenow’s “Lehrbuch der Protozoenkunde” and the “Protozoology” (1973) by Karl Grell.

The “Protistology” documents the intimate knowledge of authors of their subject and undoubtedly their fascination with protists and their structural beauty. Because of this one can criticize only a few items in “Protistology”. Due to the very rapid progress of biology, some quite recent developments are not included in the book, as e.g. the finding of mitochondrial remnants in microsporidia and in *Giardia*. Also it is evident from simple enumeration of items of the book section “Selected topics of General Protistology” that the coverage of some of these items is rather superficial (especially as molecular biology is concerned), as each item could be well the subject of a whole book. On the contrary, the inclusion in this part of the book of the very detailed chapter “Behavior of Protists” seems superfluous. An important monograph on microsporidia (“The Microsporidia and Microsporidiosis”; eds. M. Wittner and L.M. Weiss; ASM Washington, 1999) is not included in the bibliography.

In summary, I consider the “Protistology” by Hausmann, Hülsmann and Radek as the contemporary best and probably the only available comprehensive introductory book for those interested in the biology of unicellular eukaryotes. It is possible in these days to be a top “specialist” (but not a “connoisseur”!) of an organism without actually seeing it under the microscope. However, contrary to such minimalist approach, I believe that a certain amount of “organismal knowledge” belongs to a scientific culture and the pride of being a scientist. It is fortunate that the “Protistology” is here, ready to open its pages to anybody interested in the realm of protists.

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