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Protistology

3rd completely revised edition. E. Schweizerbart´sche Verlagsbuchhandlung (Nägele u. Obermiller): Stuttgart, 2003. IX + 379 pages. Format 170 × 240 mm. Binding hardcover. Listprice EUR 64.00/USD 78.00. ISBN 3-510-65208-8

The authors are affiliated with the Free University at Berlin. The volume has been prepared in cooperation with H. Machemer, M. Mulisch and G. Steinbrück. Previous editions of this book occured in print 1985 in German and 1996 in English (for review see *Centr. Europ. J. publ. Hlth, 8, 2000, pages 191–192*). Translations have been made into Russian, Japanese and Czech languages. As declared in the preface, within the last few years tremendous amount of knowledge has been gathered on the phyletic relationships between eukaryotic organisms. Included are all the unicellular organisms which normally are not mentioned in connection with the predominantly heterotrophic protozoans – for instance, all single celled algae and lower fungi. Logically, the authors have to change the English title of the former edition from *Protozoology* to *Protistology*. The authors consider the term to embrace all eukaryotic unicellular organisms, regardless whether they are heterotrophs (protozoans), phototrophs (protophyta) or saprophytes (fungi). As emphasized in the foreword to the 2nd edition by J. O. Corliss (University of Maryland), there is a pressing need for a general textbook that will accomplish most modern advances in biochemical and molecular biological research on protozoa. At the same time, students want to know what the unicellular algae and protozoa actually look like under the microscope. Thus, this authoritative publication bridges a gap in the world zoological and parasitological literature.

The volume consists of 3 parts divided into 12 chapters. **Part I** (3 chapters) is intended to give an **introduction and overview** while opening with definitions and history of nomenclature. Explained are most important terms in chronological order offering information about the criteria used for distinguishing the protists from other groups of organisms. Historical overview of protistological research comprises activities in this field of some most prominent researchers: A. van Leeuwenhoek, C. Huygens, L. Joblot, G. Buffon, L. von Oken, L. Spallanzani, L. Pasteur, O. F. Müller, E. Haeckel and many other famous scientists in the 17th through 19th century. Important milestones in the history of protozoology/protistology are introduced here in a summary-type table, starting with the use of microscopes for detection of small invisible organisms and cells (epoch 1) and conluding with the institutionalization of the discipline of protistology (epoch 5). Subsequent chapter explores the cellular organization of protists. Delineated are membranes and compartments, microfilaments and microtubules, and shape and size of protists.

Part II (3 chapters) provides insights into the **evolution and taxonomy**. Evolution of unicellular eukaryotes is analyzed here according to favourite theories: creation of hydrosphere with conditions favorable for life, reconstructing the phylogeny of all animal and plant organisms and knowing the dates of geochemistry, the evolution of mitochondria as results of symbiosis between eukaryotic and prokaryotic cells (endosymbiotic theory), finally examined is the origin of the motile apparatus. Further on, development of classification systems is presented from the time of van Leeuwenhoek up to the 21st century. Several taxonomic designations created at that time are still partly in use today: Rhizopoda von Siebold, 1845, Ciliata Perty, 1852, Sporozoa Leuckart, 1879, and others. General schemes for the development of classification systems of Protozoa are presented in succession: Buetschli (1889), Honigberg et al. (1964), Levine et al. (1980), *The Illustrated Guide to the Protozoa*, 1st ed.(1985), Margulis et al. (1990), Hausmann & Hülsmann (1996), Cavalier-Smith (1998), *The Illustrated Guide to the Protozoa*, 2nd ed. (2000). On pages VI and VII the authors present their own conception of the system of protists encompassing 13 phyla. In the chapter on the system of protists listed are suprageneric taxa up to the level of orders. Within the frame of each taxonomical group described are detailed structural, functional, phylogenetic and ecological characteristics.

Part III is concerned with **selected topics of general protistology**. This part comprises 6 chapters. In a comprehensive initial chapter dedicated to comparative morphology and physiology of protozoans outlined are the skeletal elements, holdfast organelles, extrusomes, contractile vacuoles, motility, ingestion, digestion and defecation. Subsequent chapter focuses on nuclei and sexual reproduction, nominally on their structure and function, on roles of micronucleus and macronucleus, on the life cycle of ciliates and on the nucleus during the cell cycle. Chapter on morphogenesis and reproduction deals with changes in the cell morphology, with cell division and with pattern formation in ciliates. Chapter devoted to molecular biology centres attention upon variant surface protein in trypanosomes, kinetoplast DNA network and RNA editing, immune escape and genome projects, and the like. Concluding two chapters illuminate the behaviour and ecology of protists.

In addition, there is an extensive glossary of protozoogical/protistological terms. Comprehensive bibliography gives an overview on protozoological journals and periodicals, history, general textbooks, and publications regarding the principal organization types of protists. The volume is exquisitely illustrated by 384 figures composed of precise, carefully designed line drawings and light and electron photographs featuring protozoan cells and structural details of their architecture, biological cycles, diverse molecular biological data and processes, phylogenetic relationships and dendrograms, various diagrammatic presentations, geographical maps, and portraits of famous scientists. Furthermore, there are 22 tables summarizing data relevant to protozoans, notably diverse classification schemes, phylogenetic relationships, overviews of important protozoan parasites, characterization of extrusomes, and others.

This remarkable, in concept unique book provides an essential companion volume to classical textbooks of zoology, medical/veterinary protozoology and parasitology, microbiology and related sciences.

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