# ACTA
# PROTOZOOLOGICA

## BOOK REVIEW

*Cilia and Flagella – Ciliates and Flagellates: Ultrastructure and cell biology, function and systematics, symbiosis and biodiversity*  edited by Klaus Hausmann and Renate Radek. Stuttgart: Schweizerbart Science Publishers. 2014. 299 pp. Hardback ISBN 978-3-510-65287-7.  € 39.80

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This is a wonderfully eclectic volume that arose out of a meeting that gathered many of those who managed for a time to place protists at the very center of cell biology. An unofficial subtitle could be 'Five decades of basic research' with an accent on cell ultrastructure- 50 years of linking form and function.  Most of the chapters are a mixture of review and personal notes from the perspective of an expert with several decades of experience.

The book is introduced by a chapter, authored by the editors, setting out the basic characteristics of flagella and flagellates, and cilia and ciliates. Subsequent chapters are grouped thematically: Ultrastructure, Cell Biology, Motility, Taxonomy and Systematics, Symbiosis, biodiversity and finally- Retro and Prospective.

Under **Ultrastructure** are two chapters. By Gregory Antipa, the chapter 'Cellular architecture, growth, morphogenesis, chemoattractants, and loose ends' re-caps his work with Dindinium prey capture and ingestion, ciliate cortex ultrastructure and linking ontogeny with phylogeny in ciliates. The other is „Ejection, ingestion, digestion and expulsion in ciliates by Klaus Hausmann summarizing his work on extrusosomes, the ultrastructures of feeding and contractile vacuole apparati in ciliates.

The section **Cell Biology** contains a chapter by Helmut Plattner aptly titled „A song of praise for *Paramecium* as a model in vesicle trafficking, A soto voce praise in retrospect with certain reservation". The other is „Ciliate mating types and pheromones", focusing on the story of *Euplotes*, authored by Pierangelo Luporini, Claudio Alimenti, and Adriana Vallesi.

3 chapters are under the heading **Motility**. „Encounters with cilia" on the mechanics of ciliary motion is recounted by Michael Sleigh.  Mechano and gravity sensitivity are the topics of Hans Machemer's chapter „How do protists keep up?".  Continuing with the mechanics of ciliary and flagellar motion is a chapter by Sidney Tamm, „Ctenophores and termites - systems for motility „.

Both ciliates and flagellates are treated in the section **Taxonomy and Systematics**.  In „Kinetids, concepts, and coincidences" Denis Lynn tells the story of contemporary ciliate systematics.  Øjvind Moestrup's chapter „On algal and other protist flagella and cilia" reviews the history of our understanding of flagella and relationships to cilia.

The **Symbiosis** section consists of three chapters.  *Paramecium* gets special attention in the chapter by Masahiro Fujishima and Yuuki Kodama „New insights into the *Paramecium-Holospora* and *Paramecium-Chlorella* Symbioses" and the chapter by Hans-Dieter Görtz „Prokaryotic endosymbionts in ciliates". Flagellates are the

focus of the third chapter by Renate Radek and Jürgen F. H. Strassert „Symbionts of Symbionts termite flagellates and the bacterial associations".

The section **Biodiversity** is Klaus Hausmann's chapter „Smallest protists in the deepest depth- flagellates from the abyssal sea floors". The final section **Retro and Prospective** consists of Jens Boenigk's chapter „Five decades of research in protistology - what have we learned.

Knowing where we have come from is essential to moving forward and each account tells not only where we came from but how we have gotten to where we are now. Each of the chapters are well and attractively illustrated. Overall, the book is very nicely produced and is simply a pleasure to read. This surprisingly modestly priced volume deserves a place in your personal library.