

## 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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The book *Cilia and Flagella – Ciliates and Flagellates* by Klaus Hausmann, Renate Radek and 15 coauthors found warm acceptance of reviewers. In my opinion this excellently edited book in some parts is controversial and discrepant with the phylogenetic classification of eukaryotes. In the classification proposed by Adl *et al.* (2005, 2012) the name Flagellates does not appear. According to the flagellum, Adl *et al.* (2012) declare: “The preferred term for an eukaryotic flagellum is cilium, and we have now used cilium throughout this revision.”

The proposition was intended to achieve a better communication between scientists. For the years, flagellum has been an ambiguous term because it was applied to prokaryote structures as well to eukaryote ones. The authors of “*Cilia and Flagella – Ciliates and Flagellates*” ignored the evident fact.

In the Introduction, Klaus Hausmann and Renate Radek describe properly the beating of cilia and flagella: “The first impression is that the movement of cilia seems to differ from that of flagella: flagella appear to beat in a three-dimensional wave pattern, whereas many cilia seem to beat in a two-dimensional plane. However, more detailed investigations reveal that cilia also beat in a helical or three-dimensional manner and some flagella move only in a single plane.” This statement is without any appeal to the reference by L. Kuznicki, T. L. Jahn and J. R. Fonseca (*Am. Zool.* 8. No. 4. 1968) who demonstrated on motion picture that in swimming *Paramecium* the cilia beat with a traveling helical wave from the base to the tip rather than with the back and forth movement. In the next year, the motion picture was shown on several international congresses. The paper on the helical nature of ciliary beat appeared in 1970 (*J. Protozool.* 17 (1) 16–24). In conclusion we state: “*Cilia and Flagella* (also ciliates and flagellates) are usually distinguished on the basis of the wave form but the present observations, together with previous data on flagella, show that such distinctions are untenable.”

The book *Cilia and Flagella – Ciliates and Flagellates* in the chapter “Taxonomy and systematics” carries two articles: by Denis H. Lynn and Øjvind Moestrup. Both are coauthors of the revised classification by Adl *et al.* 2005 (*J. Eukaryot. Microbiol.* 52) and Denis H. Lynn of the paper by Adl *et al.* 2012 (*J. Eukaryot. Microbiol.* 59). This version of the classification of eukaryotes is completely ignored in the book “*Cilia and Flagella – Ciliates and Flagellates*.” Moreover Moestrup used erroneous terminology like plant flagellates. Such eukaryotes never exist in nature. The term led to confusion and was used when necessary from historical point of view. In my opinion, authors of the book rather explore older ideas than new ones, even Jens Boenigk born in 1970 who anticipates: “We can only hope that the traditional disciplinary separation between protozoology and phycology will eventually cease.” Molecular phylogenetic studies already integrate some branches of biology. In the light of the phylogenetic classification of eukaryotes, such terms like protozoan and alga have only historical meaning.