

## **Problems in the systematic classification of some species of hypotrichs (Ciliophora, Spirotrichea)**

BERGER Helmut<sup>1,2</sup>, Khaled A. S. AL-RASHEID<sup>3</sup> and Wilhelm FOISSNER<sup>2</sup>

<sup>1</sup>*Technisches Büro für Ökologie, Radetzkystrasse 10, 5020 Salzburg, Austria,*

<sup>2</sup>*Universität Salzburg, FB Organismische Biologie, Hellbrunnerstrasse 34, 5020 Salzburg, Austria,* <sup>3</sup>*King Saud University, Zoology Department, P.O. Box 2455, Riyadh 11451, Saudi Arabia*

For a very long time the higher-level systematics of hypotrichs (= stichotrichs according to Small & Lynn) followed mainly the ventral cirral pattern. Since about three decades, several other morphological and ontogenetic features are successfully used, for example, the dorsal kinety pattern (e.g., kinety fragmentation of oxytrichids) or the rigid body of the stylonychines. Many species can be assigned without any problems to higher taxa like, e.g., the stylonychines, the urostyloids, or the amphisiellids because they show at least one apomorphy of a suprageneric taxon. On the other hand, a considerable number of species is known which cannot be classified in a certain group. Two types can be distinguished, namely (i) those species which lack any higher-level apomorphy (e.g., *Saudithrix terricola* Foissner et al.); and (ii) those which have two or more apomorphies, which, however, assign them to different taxa. Examples for the second type are (i) *Neokeronopsis spectabilis* (Kahl) which has a midventral pattern like the urostyloids and a dorsal kinety fragmentation like the oxytrichids; and (ii) a new, *Uroleptus*-like species with a rigid body which would assign it to the stylonychines. In contrast, the molecular data of this species suggest a close relationship with *Oxytricha*. Financial support was provided by a grant (APART; Austrian Programme for Advanced Research and Technology, Project 10940) of the Austrian Academy of Sciences, Vienna, to H. Berger, and by KACST (King Abdulaziz City for Science Technology; Project LGP-7-9), Riyadh, Saudi Arabia for K. A. S. AL-Rhasheid and W. Foissner.