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Reconciling morphological and 18S rRNA phylogenies in the stichotrichines (Ciliophora, Spirotrichea), including new sequences from some rare species

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We performed a comparative morphological and molecular study on oxytrichid and urostylid stichotrichs (= part of the former hypotrichs). Included are new small subunit (18S) ribosomal RNA (rRNA) gene sequences from five rare oxytrichs (*Gonostomum namibiense*, *Cyrtohymena citrina*, *Hemiurosoma terricola*, *Onychodromopsis flexilis*, *Orthoamphisiella breviseries*) and published sequences, based on cultures provided by W. Foissner, of two key genera, viz., *Gastrostyla* and *Engelmanniella*. These and other sequences, altogether 27 species representing 23 genera, were used to analyze how 18S rRNA based phylogenetic trees can be reconciled with the morphological and ontogenetical data. In 18S rRNA trees, the oligotrichine family Halteriidae invariably clusters within the oxytrichid clade, usually near *Oxytricha granulifera*, type of the genus. This position is hardly supported by morphological and ecological evidences and, especially, it contradicts the current ontogenetic findings; possibly, it is an artifact caused by taxa undersampling. In contrast, most morphological and DNA sequence data of the stichotrichs can be harmonized with the CEUU (Convergent Evolution of Urostylids and Uroleptids) hypothesis which suggests that the urostylid midventral pattern evolved from an oxytrichine ancestor developing a second time within the Oxytrichidae. The systematic position of one of the two key genera could be clarified with the 18S rRNA sequences: *Gastrostyla* is a stylonychine oxytrichid. Based on the molecular data and a reassessment of ontogenesis, a new genus is established for *Onychodromus quadricornutus* Foissner, Schlegel & Prescott.

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