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# Next generation sequencing reveals a new hypothesis of Microdontinae relationships

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## Abstract

The subfamily Microdontinae is a cosmopolitan group of ant-associated hoverflies. Phylogenetic relationships of the more than 500 described species are unclear. Until recently, more than 300 species were classified in *Microdon*. Reemer & Ståhls (2013) published the first phylogenetic study dealing specifically with Microdontinae. Yet many relationships remained uncertain or unresolved, in part because many taxa were unavailable for molecular study.

In the study, new techniques were used to extract DNA from pinned museum specimens, which allowed for the inclusion of rarer taxa. The study utilizes probes developed specifically for use with Syrphidae and samples 1302 orthologous genes. 91 taxa, including specimens from all six biotic regions, were sequenced.

A new hypothesis of Microdontinae relationships is presented with the resulting tree compared to those that came before. Paraphyly in the tree is discussed. Other aspects that will be discussed are potential implications for classification, interesting biogeographic patterns, and evolutionary history.

**Keywords:** Microdontinae, phylogeny, taxonomy, classification

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