

**Duckert Clément (2016) :**

Morphological and molecular taxonomy of *Euglypha* - Towards a calibration of the molecular clock

**Abstract:**

The genus *Euglypha* is composed of testate amoebae that can be found in a broad variety of soil and freshwater environments. They strengthen their tests with small ornamented self-secreted silica scales whose shape, dimensions and arrangement are taxonomically informative. However, because of their small size, species identification can be reliably achieved only based on good quality light or scanning electron microscopy. For this reason, the taxonomy of these organisms is still incomplete or even controversial. As a consequence, many forms with diverging taxonomic positions (and, most probably, ecologies) are pooled together in ecological studies. In this study, we characterized 10 isolates by documenting their morphology with scanning electron microscopy and obtaining partial 18S rRNA sequences, constructed a phylogenetic tree of previously and newly barcoded species, and calibrated a time-scale phylogenetic tree based on previously established fossil records to evaluate the evolution within genus *Euglypha*. Firstly, we described five new species from that genus. We demonstrated that the species *Euglypha rotunda* (the most common and widespread member of the genus) is not monophyletic based on morphology as well as molecular data. Several traits seem to be synapomorphic for some lineages, allowing us to infer the position of the different fossils within the phylogenetic tree of the Euglyphidae. Our molecular clock analysis shows that the genus *Euglypha* appeared during the Jurassic and that some of these species have diverged very recently.