

ABSTRACT

Anoxic sediments host a wide variety of ciliates. Although it is known that anaerobiosis has independently arisen in several lineages of the main 11 lineages of Ciliophora and anaerobes have been found in at least eight lineages of ciliates, the diversity of anaerobic ciliates of the class Armophorea is severely understudied. Similarly, not much is known about their hydrogenosomes. To deepen our knowledge about the diversity of Armophorea, we have cultivated more than 100 armophorid strains from fresh water, brackish, and marine anoxic sediments worldwide. We determined their SSU rDNA sequences, performed protargol staining techniques, and studied light-microscopic morphology. In addition, we used transmission electron microscopy to assess the ultrastructure of some of the strains. Several novel clades of metopids, the free-living anaerobic ciliates of the class Armophorea, were identified. Importantly, a new deep lineage of marine anaerobic ciliates, muranes, was discovered. According to the SSU rDNA analysis, it is related to SAL group (Spirotrichea, Armophorea, and Litostomatea) with Cariacotrichea, but forms a separate lineage, possibly a novel class. We conclude that anoxic sediments harbour a high diversity of undescribed anaerobic ciliates.

Key words: Anaerobiosis, Armophorea, ciliates, hydrogenosomes, diversity, SSU rDNA