

# How to distinguish *Neoparamoeba* (Amoebozoa, Dactylopodida) species

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*Neoparamoeba* is the genus of marine and estuarine amoeboid organisms. Some members of this genus can parasitize tissues of fishes and invertebrates. Therefore, a great amount of mainly SSU rDNA sequences was accumulated during two last decades. As a rule, these molecular data were not accompanied by appropriate morphological descriptions. Therefore, we deal with a large amount of sequences which were assigned to different species of the genus *Neoparamoeba* without morphological investigation. This especially concerns *Neoparamoeba pemaquidensis*, the species name that has been applied to numerous very diverse sequences of *Neoparamoeba*. At the first sight, different strains of “*Neoparamoeba pemaquidensis*” clade are very similar in morphology. However, the sequences of this group are split into several separate branches with sequences of *Neoparamoeba aestuarina* sometimes branching between them. This suggests that “*Neoparamoeba pemaquidensis*” clade includes more than one species. By this study we propose how different strains of “*Neoparamoeba pemaquidensis*” clade can be distinguished. We provide the set of morphological characters: outline of locomotive form, length and number of subpseudopods, width of anterior hyaline area, number of parasomes and ultrastructure of the cell coat. Also some physiological characters such as rate of movement, photosensitivity and thermal sensitivity do matter. We also report the first result on reconstruction of phylogenetic relationships in the genus *Neoparamoeba* using the mitochondrial COI gene. In this study we compared our new molecular and morphological results and revealed that the huge group of sequences identified as “*Neoparamoeba pemaquidensis*” can be divided into several separate species. Partially supported with the grants 15-29-02749-ofi\_m and 18-34-00726-mol-a from the Russian Foundation for Basic Research.