

Description of “*Candidatus Deianiraea vastatrix*” gen. nov. sp. nov.

“*Candidatus* De.i.a.ni.rae'a va.sta'trix” (De.i.a.ni.rae'a; N.L. fem. n., dedicated to Deianira, in reference of the Greek myth in which Heracles was killed by his wife Deianira, who covered him with a tunic poisoned by the blood of the centaur Nessus; N.L. adj. from *vastare*, to devastate, to destroy, *vastatrix*, the destroyer).

Bacterium found in an extracellular association with the ciliate *Paramecium primaurelia* CyL4-1. Slightly curved rod-like shape (1.6 to 1.7 µm by 0.1 to 0.2 µm in size), frequently displaying a narrowed side ending up with a sharp apical tip, located in close proximity of or even direct contact with the *P. primaurelia* cell membrane from the outside. Electron-dense cytoplasm. Devoid of flagella. Basis of assignment: SSU rRNA gene sequence (accession number: MH197138) and positive match with the species-specific FISH oligonucleotide probes Deia_416 (5'-GAGTTTTACAATCTTTCG-3') and Deia_538 (5'-AGTAACGCTTGGACTCCA-3'). The complete genome sequence of the bacterium was deposited under the accession CP028925.

Description of “*Candidatus Deianiraeaceae*” fam. nov.

“*Candidatus* Deianiraeaceae” (De.i.a.ni.rae.a'ce.ae, N.L. fem. n. “*Candidatus* Deianiraea” type genus of the family; suff. *-aceae* ending to denote a family; N.L. fem. pl. n. “*Candidatus* Deianiraeaceae” the family of genus “*Candidatus* Deianiraea”)

The family “*Candidatus* Deianiraeaceae” is defined based on phylogenetic analysis of 16S rRNA gene sequences of the type genus and uncultured representatives from various origins; several sequences derive from freshwater environments, and were frequently retrieved in association with eukaryotic organisms. The family belongs to the order *Rickettsiales*, and currently contains one genus, “*Candidatus* Deianiraea”.

Emended description of the order *Rickettsiales* Gieszczykiewicz (1939) Dumler, Barbet, Bekker, Dasch, Palmer, Ray, Rikihisa and Rurangirwa 2001

Rickettsiales (Rick.ett.si.a'les. N.L. fem. n. *Rickettsia* type genus of the order; *-ales* ending to denote order; N.L. fem. pl. n. *Rickettsiales* the *Rickettsia* order)

The description is identical to the one provided by Dumler and Walker (2015), with the following emendments (**evidenced in bold**):

“Rod-shaped, coccoid or irregularly shaped bacteria with typical Gram-negative cell walls. Sometimes harbouring flagella. **In most cases**, multiply only inside host cells, **but at least one exception is known**”

and

“The bacteria are parasitic forms associated with host cells of the mononuclear phagocyte system, the hematopoietic system, or the vascular endothelium of vertebrates; with various organs and tissues of helminths; with tissues of arthropods, which may act as vectors or primary hosts; **or with unicellular eukaryotes, either intracellularly or extracellularly**”

Dumler JS, Walker DH. “*Rickettsiales*”. In Whitman WB (ed). *Bergey's Manual of Systematics of Archaea and Bacteria*. John Wiley & Sons, Ltd, 2015, <http://doi:10.1002/9781118960608.obm00074>.