Tuguriella a new name for Tugurium O’Dogherty 1994 (Radiolaria), non Fischer 1880 (Gastropoda); incidences on its systematic position

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In 1994, O’Dogherty proposed the new radiolarian genus Tugurium from the Albian of the Umbria-Marche Apennines (O’Dogherty 1994, p. 121). We are indebted to José Sandeoval for kindly pointing out to us that this name has already been used for a recent and quite common gastropod (Fischer 1880 in Kiener, p. 450). Therefore, we propose Tuguriella as a replacement name (type species: Lithostrobus pagoda Squiabel 1904, p. 229, by original designation) for the preoccupied homonym Tugurium O’Dogherty 1994, non Tugurium Fischer, 1880. The genus Tuguriella (feminine gender) is monospecific and restricted to the Albian interval. It is a rare conical parvicingulid-type radiolarian having four (or more) circumferential rows of circular pores per chamber.

The phyletic link of this genus is debatable and it is not an easy problem. As it was illustrated by O’Dogherty (1994) a direct link from the genus Parvicingula Pessagno 1977a, is not possible, since the last representatives of this genus are recorded at the lower Aptian (Oceanic Anoxic Event 1; Fig. 1). Originally, O’Dogherty (1994) suggested a phylogenetic origin from representatives of Crolanium by its morphological resemblances at segmental level and by the presence of a common apical horn. The radiolarian genus Foremanina described by Empson-Morin (1981) is only known from the Late Cretaceous (Late Campanian) of the Pacific Mountain (DSDP, Leg 32) and it shows a high resemblance with the genus Tuguriella, but it must to be regarded as a close homeomorph of the latter because no such forms are known in the Cenomanian to the Early Campanian interval. Some slight structural differences between Foremanina and Tuguriella can be only noted at cephalic position. The genus Tuguriella bears a small apical horn while Foremanina has none. The genus Foremanina was originally placed in the Parvicingulidae (Pessagno 1977a), but neither the arrangement and number of pore rows by segment, nor the nodose circumferential ridges are characteristic of the family.

Despite of these weak morphological differences and the stratigraphic disconnection between both genera, De Wever et al. (2001) considered the genus Tugurium as a junior synonym of Foremanina. In our opinion, the genus Tuguriella seems to be morphologically closely related either to Xitus spicularius (Aliev 1961) or to Crolanium triangulare (Aliev 1968) and it must be considered as an end-member form linked to one of these phylogenetic branching (Fig. 1). Hence, Tuguriella should be placed in the family Xitidae (Pessagno 1977b, p. 53). Despite these opposite standpoints, the family placement is in agreement with De Wever et al. (2001) who placed the Late Cretaceous genus Foremanina under the same family.

The representatives of the Xitidae experienced a severe decline through the Oceanic Anoxic Event 2 (OAE2) of the Late Cenomanian. The genus Crolanium became extinct prior the OAE2 at a global scale, and the genus Xitus in the Northern Apenines last occurred in the Upper Cenomanian, more precisely within the Bonarelli anoxic level (Erbacher & Thurow 1997; Musavu-Moussavou et al. 2007). However, this datum seems to be a local extinction because Xitus has been discreetly reported from Campanian levels of California (Pessagno 1976) and Japan (Taketani 1982), Lower Turonian strata of the Crimean Mountains (Bragina 2004) and from Coniacian to Santonian levels of the Russian platform (Vishnevskaya & De Wever 1998). Actually, work in progress let us well recognize the ancestral form of Foremanina in not yet described Campanian representatives of Xitus, which only display a single row of tubercles on chamber. This fact points to Xitus as the most probable forerunner for the monospecific genus Foremanina (Fig. 1).

In conclusion both genera Tuguriella (nomen novum) and Foremanina are close homeomorphs belonging to the family of multicrytid nassellarians Xitidae and cannot be regarded as
synonyms, at least from a practical and stratigraphic point of view. Two possible phylogenetic origins are suspected for *Tuguriella*, either from *Crolanium* or *Xitus* during the Early Albian, whereas the genus *Foremanina* is tentatively considered as an offshoot of latest *Xitus*. Since the Upper Cretaceous radiolarian stratigraphic record is not known at a global scale in a satisfactory way, it cannot be excluded either, at the current state of knowledge, that *Foremanina* or *Tuguriella* forms can exist between the Cenomanian and the Santonian (Fig. 1).

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