



Tuberitinidae MIKLUKHO-MACLAY, 1958: life cycle, ecology, diagenesis

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A detailed microfacies analysis of biogenic carbonates from the Cantabrian Mountains has revealed the widespread occurrence of Tuberitinidae. This group of organisms consist of a diverse set of morphologies which have been described from the early most Silurian to Middle Permian. Since they were first described, the Tuberitinidae have been attributed to several differing taxinomical groups, including; calcispheres, foraminifera and the microproblematica. Further to the confusion surrounding taxinomical affinity, several classifications at the generic and specific level have been erected based upon morphological differences that have been recognised as different growth stages. The specimen bearing rocks belong to the San Emiliano Formation (Bashkirian to Moscovian in age), Cantabrian Mountains, Spain. These units are laterally persisting limestones which separate major deltaic clastic intervals. Tuberitinidae observed from this succession are highly morphologically variable, with examples from previously recognised growth stages observed – in addition to several morphologies that appear to be transitional stages. Observations also suggest that wall structure within the family is far more homogeneous than previously thought. Hereafter, it is suggested that the various morphologies observed do not represent separate species or genera but different stages within the life cycle of the Tuberitinidae. Stages of the life cycle suggested are as follows: Stage 1 – Attached Tuberitine (Initially individual test attached by basal disc), Stage 2 – Free-Parted (Individual free test), Stage 3 – Free-Diplosphaerine (spherical test with next generation test forming within wall structure) and Stage 4 – Free-Pioneer (Individual free spherical test). Wall structures observed imply that homogeneous micritic walls are consistent throughout the Tuberitinidae and that perforation may result from aragonite to calcite neomorphism. Furthermore a new growth pattern is suggested. Succeeding chambers are currently described as being attached to the top or sides of proceeding ones, however, evidence presented here would seem to suggest that the opposite of this occurs; smaller chambers are envisaged as growing on the basal side of tests. Growth of new tests occasionally occurs directly beneath the first test but more frequently occurs where the test wall attaches to the basal disc, resulting in a rectilinear or jagged growth pattern.