Geophysical Research Abstracts, Vol. 8, 02858, 2006
SRef-ID: 1607-7962/gra/EGU06-A-02858

On the taxonomic position of Fusulinoida (Foraminifera)

V.I. Mikhalevich

Zoological Institute Russian Academy of Sciences, Universitetskaya nab., 1, 199134, St. Petersburg, Russia. mikha@JS1238.spb.edu

The representatives of the order Fusulinoida Fursenko, 1958 are the basic group in the study of the paleoecology of the Paleozoic. Taxonomically according to the generally accepted classification of Loeblich & Tappan (1987) this special taxon stands separately from all the other large foraminiferal taxa and fully disappeared at the end of the Permian. We regard here the composition of the suborder Fusulinoida as consisting of the three orders: Tournayellida, Endothirida and Fusulinida (with the suborders Ozawainellina , Schubertellina , Fusulinina , Schwagerinina, Staffellina, Neoschwagerinina). All the three orders belong to one phyletic line as based on their evolutionary morphological changes. The morphological similarity of the higher fusulinoids with the higher milioloids (suborder Alveolinina) was marked long ago and was considered as a result of convergence. The main difference of the both groups is the morphology of the initial part of their shells which in the alveolinids is represented (if present) by the forms with the two tubular chambers per whorl and in the fusulinids with the forms having the more multiple and broad chambers per whorl. The other differences between the both groups marked usually, such as the presence in the fusulinoids of nodosites, chomata and parachomata, the fluted character of the septum, the character of the secondary septula (usually not full in Fusulinida) are represented not in all of the fusulinid taxa. Thus in *Gallowainella* (Shubertellidae) the chomata absent, in Neoshwagerinida the septum are not fluted, the secondary septula fully dividing the chambers like in alveolinids. The character of the inner passages permitting the circulation of the cytoplasm inside the shell being more primitive in Fusulinida are more similar in neoshwagerinids and alveolins (Leppig et al., 2005). The forms with the more broad and multiple chambers similar to the initial fusulinoid part and to endothyrids are also known among the Miliolata group (e.g. *Nummoloculina* Steinmann,1881, *Danubiella*

Neagu,1968, *Hechtina* Bartenstein et Brand, 1949, *Kayseriella* Sirel, 1999- at the adult stage, *Zoella* Loeblich et Tappan, 1962, fisherinids, peneroplids - from the very beginning of the growth of the shell). The development of pseudomultichambered to true multichambered shell from the pseudotwochambered one with the long tubular chamber also took place in the similar way in the evolution of the both groups. And in both of them the initial undivided tubular part is often preserved in their multichambered shells. The presence in the Fusulinoida of the deposition of the shell matter at the bottom of the chambers is also generally considered to be their special characteristic taxonomic feature. But similar depositions are also present in the representatives of Miliolata (*Periloculina*). And comparison of the screening miliolid teeth in the sectioned shells with the chomata and nodosites in edothyrid sectioned shells (Mikhalevich, 2005, Mikhalevich, in press) shows their full morphological similarity. Chomata and nodosites are identical to the miliolid teeth. The change of the axes of coiling from streptospiral to planospiral is also often met in these both groups. The next special feature traditionally considered to be specific for the Fusulinoida – their special microgranular wall (often with the outer agglutination) consisting of from one to four layers, sometimes with the radial fibrous structures. But the typical miliolid calcareous secreted wall can also easily turn into the microgranular one (Gubenko, 1988, MacIntyre & Reid, 1998). The radial structures resembling the radial fibrose fusulinid wall not known earlier were recently also brought to light in some larger recent miliolids (Mikhalevich, 2004). The capability of the different degree of agglutination and the variability of the number of the layers in the shell wall are also similar in the both groups discussed. All this permits to conclude that the features of profound similarity in the fusulinoid and milioloid shell and wall structure are not the result of convergence but of the close relationship. Obviously both of them represent two branches of one ancient phyletic lineage and hence ought to be united taxonomically in one taxon of the supraorder level, namely in the class Miliolata Saidova, 1981. The understanding of the phyletic relationship of these two groups is important and could influence the conclusions of the stratigrafic and paleoecological studies.