SPHAEROGYPSINA GLOBULUS SENSU LATO (REUSS, 1848) RECENT AND FOSSIL IN MICRO XCT_400 XRADIA-ZEISS TOMOGRAPHY AND FILMS

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The aim of this study is to provide some basic information to tackle the systematics and the shell morphology of the globular foraminifer called *Sphareogypsina* Galloway, 1933. We focus on the species *S. globulus* (Reuss, 1848), which, first described as a Bryozoan, seems to be common in all Palaeogene tropical shallow water carbonates. In fact, it has been recorded in Caribbean, Mediterranean, and Red Sea to Indo-Pacific sediments from the Palaeocene to the recent. Although some morphological variations have been reported (e.g., the proloculus size seems to be larger in the late Eocene than in the Recent) and few genera have been established, all rounded gypsinids are commonly called *S. globulus sensu lato* in every bioprovince and from the Palaeogene onward only due to the lack of detailed morphological characterization of the internal structures of the juvenile apparatus and its ontogenetic development. The main factor that hampers a detailed morphological description is the spherical morphology of the specimen which does not show any equatorial (or axial) plane where the whole embryo can be properly exposed and studied.

The MicroCT- method offers an accurate interpretation of internal structures, dimensions of structural elements and volumetric rendering as well as the analysis of ontogenetic development of foraminiferal tests without test destruction.

To accomplish these tasks, we have scanned almost 30 specimens of well preserved globular shpaerogypsinids using two main equipments (Micro XCT_400 Xradia – ZEISS from the Slovenian National Building and Civil Engineering Institute, and the MicroCT- Skyscan1173 from the Institute of Palaeontology, University of Vienna) and we have observed their embryonic apparatus. So far, the material we have studied encompasses specimens from the Cuisian (France), Priabonian (France and Tanzania), Chattian (France), Burdigalian (India), Badenian (Austria) and Recent (Adriatic Sea, Bay of Aqaba, Florida, Okinawa).

On all specimens we have observed the characteristic “chessboard surface” which seems to be a variable parameter to be kept into consideration for taxonomic differentiation. Shape and size of initial chambers and the building mechanisms of the subsequent chambers have been observed on a three dimensional basis seeming that a number of connections are open between the proloculus and all the surrounding chambers. The size (in term of volume) between proloculus (P) and deuteroloculus (D) points, at least in recent specimens, to an isolepidine embryonic apparatus where both chambers possess similar size (Recent specimen from Florida: P: $4.9 \cdot 10^{-5}$ mm^3; D: $4.1 \cdot 10^{-5}$ mm^3), while in specimens from the uppermost Eocene it seems to be slightly nephrolepidine (specimen from Tanzania: P: $9.9 \cdot 10^{-5}$ mm^3; D: $2.7 \cdot 10^{-5}$ mm^3).

In many other specimens the proloculus is so small (diameter < 20 microns) that is hard to be recognized and it might point to microspheric generations.

These first observed differences lead to the conclusion that a profound revision of the genus *Sphaerogypsina* is due and necessary (as suggested by Hottinger et al., 1993), and the results must be compared with data from the literature to check if evolutionary trends are visible and/ or if palaeo-bioprovinces works as a boundary among taxa or if the genus was and is a cosmopolitan inhabitant of all shallow water deposits.

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