

Reproductive strategy of planktic foraminifera *Orbulina universa* d'Orbigny: Processes and its importance

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Modern planktic foraminifera *Orbulina universa* d'Orbigny is a unique species as making spherical outer chamber in the late stage of their life. They are widely distributed from tropical to subpolar water and succeeded expanding their niche in the world ocean. In this study we cultured *O. univesa* under the controlled environmental conditions in the laboratory and succeeded growing up and bringing gametogenesis (sexual reproduction) for several specimens. Its morphologic and cytoplasmic transformations could be discerned as following 4 phases: 1) Spines and rhizopodia were shortened and never took any foods at 24 hours before gamete release, 2) dissolved inner (initial) chambers and becoming cytoplasmic deformation, 3) Cytoplasmic color was gradually changed from dark brown to whitish grey. At this time, huge number of gametes were developing at the inside of the spherical chamber. 4) Gametes release (gametogenesis). Before gamete releases, spherical outer shell was dissolved partly and/or became large holes on the shell surface. It was inferred that pH of shell inside became lower while generating gametes. Such dissolving processes of outer shell may be one of the function for relasing gametes easily from the spherical chamber.