

# Morphologic changes of a calcareous nannofossil group, *Reticulofenestra* group, from Eocene to Miocene in the Atlantic Ocean

\*Doi Nobuhiro<sup>1</sup>, Koji Kameo<sup>2</sup>

1. Division of Earth and Environmental Sciences, School of Science and Engineering, Chiba University, 2. Department of Earth Sciences, Faculty of Sciences, Chiba University

Coccolithophores, unicellular marine phytoplankton, produce calcite plates called coccolith, consisting of two elliptical discs arranged a lot of tiny, tabular calcite plates (e.g., Young et al., 1992). The *Reticulofenestra* group, composed of a genus *Reticulofenestra* and its related taxa, is one of the major coccoliths during the Cenozoic. Specimens have been classified by their shape and central structures of a coccolith. Size variations during the Miocene and Pliocene have been studied (Young, 1990; Kameo and Bralower, 2000) because frequent size reductions can be considered to correlate globally. Changes in size and morphologic characters of *Reticulofenestra* group have been studied mainly in the Neogene and Quaternary, and a few in the Paleogene to the Early Miocene. So, we applied biometric measurements to *Reticulofenestra* group in the Paleogene to the Early Miocene in order to clarify evolutionary trend of this taxon.

In this study, we investigated morphologic characters and sequential size variations of *Reticulofenestra* group during the Eocene–Miocene based on the scanning electron microscope (SEM) observation. Samples from Ocean Drilling Program (ODP) Leg 208 in the South Atlantic Ocean were used. The ages of the core used here range from ~42 Ma to ~10 Ma. One hundred specimens of *Reticulofenestra* group were examined and morphometric analysis (measurements of diameters of overall coccolith and its central part) were done using a software ImageJ.

Specimens in the *Reticulofenestra* group can be divided into three genera, *Cyclicargolithus*, *Dictyococcites*, and *Reticulofenestra* based on their morphologic characters. Moreover, dominated ranges of larger forms of each genus were clearly different; *Reticulofenestra* in the Eocene–lower Oligocene, *Dictyococcites* in the Oligocene–lower Miocene, and *Cyclicargolithus* in the lower Oligocene–lower Miocene, respectively. The size of the central opening of *Cyclicargolithus* can be a good morphologic character to separate it from other forms of *Reticulofenestra* group. After the middle Miocene, another abundant occurrence of large forms of *Reticulofenestra* are observed with some morphologic changes. Detailed observations will enable us to clarify specific characters of each *Reticulofenestra*.

## [Reference]

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