Pletolithus giganteus Cappelli et al. (2019)

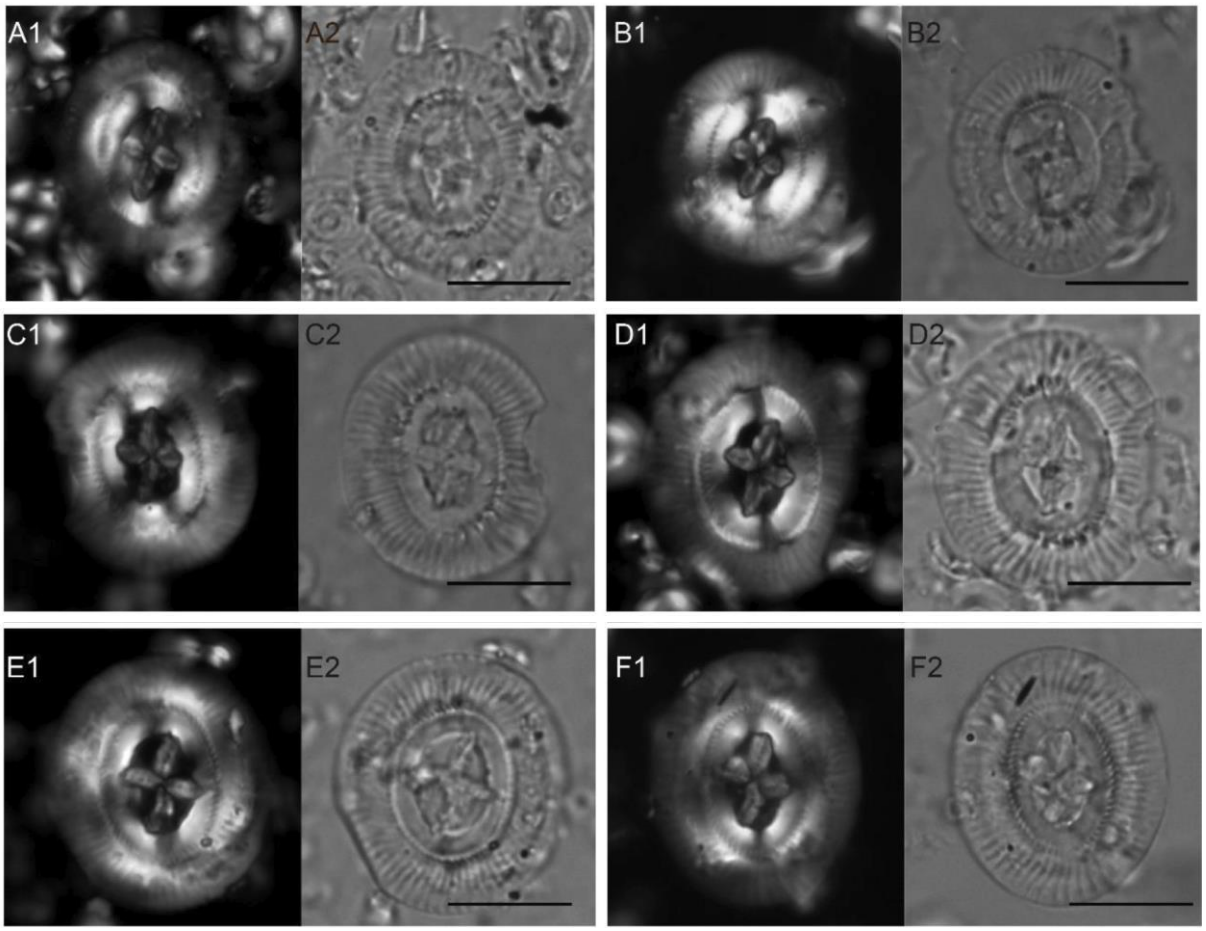
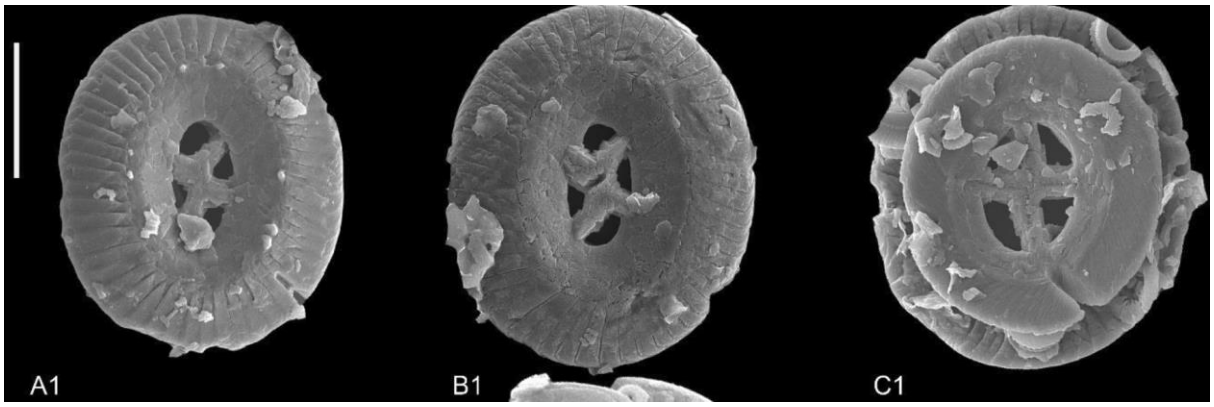


Fig. 6, A1, A2, B1, B2, C1, C2, D1, D2, E1, E2, F1, F2

Figure 10. SEM images from IODP Site U1410. All scale bars represent 5 μm. A. *Pletolithus giganteus*, Sample U1410B-21X-3, 127. A1. Complete placolith in distal view, A2. Detail of central-area cross-bars. B. *Pletolithus giganteus*, Sample U1410C-19X-3, 65. B1. Complete placolith in distal view, B2. Detail of central-area cross-bars. C. *Pletolithus giganteus*, Sample U1410B-21X-3, 127. C1. Complete placolith in proximal view, C2. Detail of central-area cross-bars.



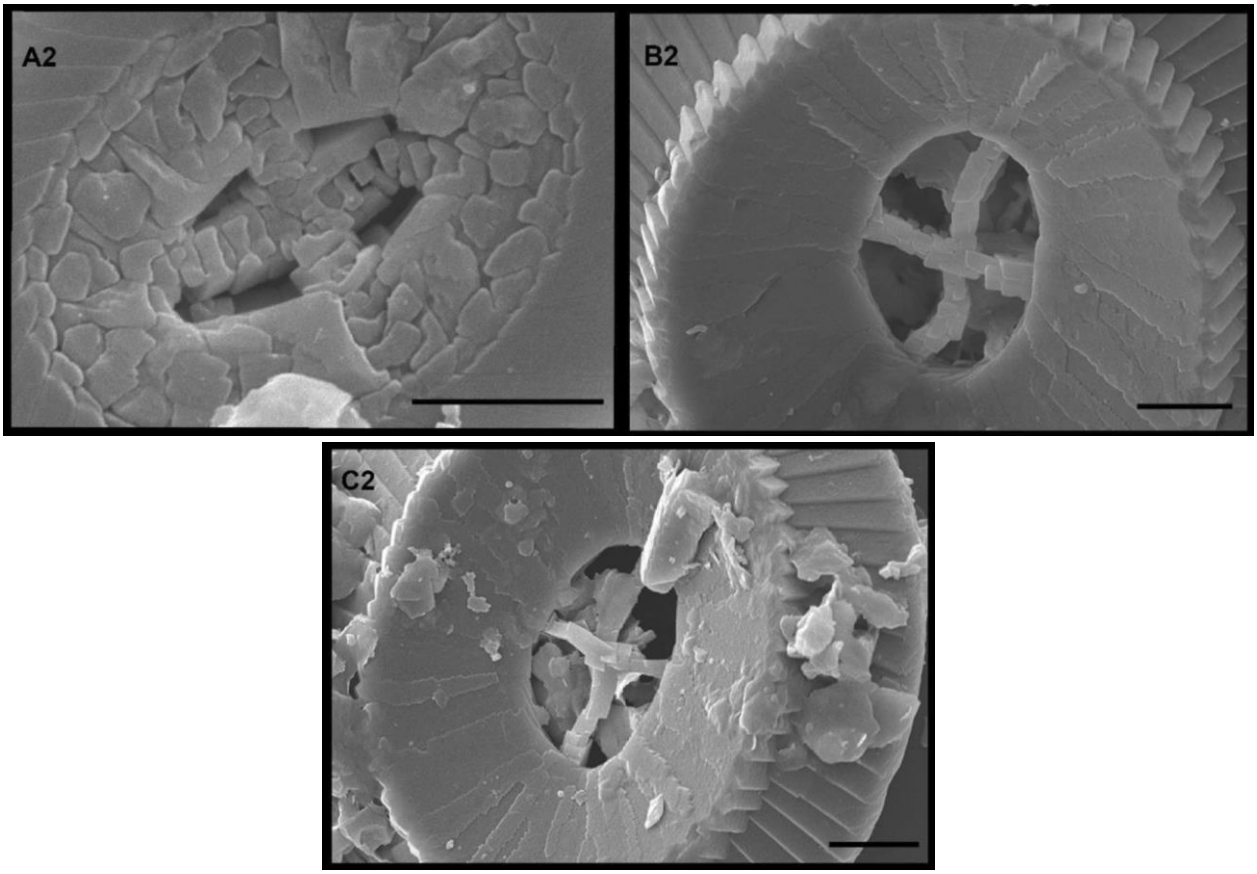


Fig. 10, A1, A2, B1, B2, C1, C2

Figure 6. LM images of *Pletolithus* from IODP Site U1410. Scale bar 10 μm. A. *Pletolithus giganteus* (paratype), Sample U1410C-20X-6, 67. 1. Crossed nicols, 2. Parallel nicols. B. *Pletolithus giganteus*, Sample U1410C-20X-6, 67. 1. Crossed nicols, 2. Parallel nicols. C. *Pletolithus giganteus*, Sample U1410C 20X-4, 67. 1. Crossed nicols, 2. Parallel nicols. D. *Pletolithus giganteus* (holotype), Sample U1410C-20X-3, 67. 1. Crossed nicols, 2. Parallel nicols. E. *Pletolithus giganteus,* Sample U1410C-20X-3, 67. 1. Crossed nicols, 2. Parallel nicols. F. *Pletolithus giganteus,* Sample U1410B-20X-5, 40 1. Crossed nicols, 2. Parallel nicols.

Derivation of name: From latin *giganteus,* meaning very big, referring to the very large size of this species.

Diagnosis: Very large (> 16 μm) elliptical placoliths with narrow to broad central-area spanned by robust bars that form an asymmetric diagonal cross.

Description: Very large coccolithacean with a distal shield consisting of 60-70 elements and an elliptical outline. The tube connecting the two shields is broad and consists of flat elements with complex sutures. The smaller proximal shield is composed of elements with dextral obliquity in proximal view. Specimens belonging to this species show high variability in the width of the central-area, which can occupy from 7% to 13% of the total placolith area. A broad, asymmetric diagonal cross spans the central-area. On the distal side, the bars consist of rectangular plates stacked one on another, whose axes are roughly aligned with the long axes of the bars. On the proximal side, the bars

are composed of one row of robust wedge-shaped elements (roughly triangular), normally oriented with the axis of the bar. These elements partially interfinger, but do not interfinger along the full length of the wedge. Thickening at the base of the triangular plate is common and it gives rise to a poorly developed depression along the axis of the bar. Under cross-polarized light, thin median extinction lines run along the bars.

Differentiation: *Pletolithus giganteus* can be distinguished from other species of the genus by the intermediate orientation of the broad cross-bars. *Pletolithus giganteus* can be differentiated from *P. staurion* by its large size and wider central-area. *Pletolithus giganteus* can be distinguished from *P. gigas* by the diagonally oriented (X-shaped) cross-bars of the latter form. The most diagnostic feature to distinguish consistently between these species is the bar-length ratio. This value is generally >1.3 in *P. giganteus* and <1.3 in *P. gigas. Pletolithus giganteus* can be distinguished from *P. mutatus* by the more robust cross-bars, their different ultrastructure, and the raised tube cycle.

Coccolith length: 16–22 μm.

Holotype: Figure 6, fig. D.

Holotype length: 21 μm.

Paratype: Figure 6, fig. A.

Paratype length: 18 μm.

Type locality: IODP Exp. 342 Site U1410, Southeast Newfoundland Ridge, northwest Atlantic Ocean.

Type level: Subzone CP13b (Okada and Bukry, 1980) or Zone CNE10 (Agnini et al., 2014), middle Eocene, Sample U1410C-20X-3, 67 cm.

Range: Restricted to upper subzone CP13a-CP13b (Okada and Bukry, 1980) or upper Zone CNE9-Zone CNE10 (Agnini et al., 2014).

Remarks: The Base of *Pletolithus giganteus* slightly predates the Base of *Pletolithus gigas,* which is used to mark both the base of subzone CP13b (Okada and Bukry, 1980) and the base of Zone CNE10 (Agnini et al., 2014).

Occurrence: The species first occurs, with low frequency, in the lower part of Chron 20r.

Repository: Holotype and paratype are deposited in the permanent collection of the Museo di Geologia e Paleontologia del'Università di Padova (MGPD), Padova, Italy (protocol MGP-PD 32095, MPG-PD 32096.).

Cappelli, C., Agnini, C., Bown, P.R. & de Riu, M., 2019. Middle Eocene large coccolithaceans: Biostratigraphic implications and paleoclimatic clues, *Marine Micropaleontology*, https://doi.org/10.1016/j.marmicro.2019.101812