The ultrastructure of the apical pore field in raphid and araphid diatoms

Van de Vijver, Bart[1,2] & Cox, Eileen J.[3]

[1] Botanic Garden Meise, Department of Bryophyta & Thallophyta, Nieuwelaan 38, B-1860 Belgium (bart.vandevijver@plantentuinmeise.be)
[2] University of Antwerp, Department of Biology, ECOBE, Universiteitsplein 1, B-2610 Wilrijk, Antwerpen, Belgium (bart.vandevijver@uantwerpen.be)
[3] The Natural History Museum, Cromwell Road, London, SW7 5BD, UK (E.Cox@nhm.ac.uk)

Several genera of araphid (e.g., fragilarioid genera, *Diatoma*, *Grammatophora*) and raphid (e.g., cymbelloid genera, *Gomphonema*, *Rhoicosphenia*) possess well-defined groups of small pores at their apices. These areas, termed apical pore fields, play a clear role in the secretion of mucilage and thus the attachment of the frustules to the substratum or in the formation of colonies. In the past several terms, including ocellulimbus (Williams 1986), have been proposed for these structures in araphid taxa.

Using high resolution scanning electron microscopy, the structure and diversity of apical pore fields in a range of araphid and raphid diatom genera have been investigated. The results reveal several differences between the pore fields of araphid and raphid diatoms. In araphid diatoms, apical pore fields are usually clearly delimited, often by thickened rims, whereas in raphid genera such as *Cymbella*, *Gomphonema* and *Didymosphenia*, the apical pore field is formed of a series of rows of small simple pores lacking any physical separation from the rest of the valve face. The latter usually have a more complex internal structure, with narrow ribs between the rows of pores, whereas in araphid genera such as *Fragilaria* or *Diatoma*, only simple, unoccluded pores are observed internally.

The poster illustrates the different types of apical pore field that can be observed in selected araphid and raphid genera in relation to their suprageneric relationships. The morphology of the different apical pore fields is investigated in the light of the life form of the relevant genera.

This study is part of the DIATERM working group programme, which is collating and revising the terminology used to describe the morphology of the diatom valve.

References:

Williams, D. (1986) Comparative morphology of some species of *Synedra* Ehrenberg with a new definition of the genus. *Diatom Research* 1: 131-152.