

## Ecological implications of the haplo-diploid versatility in coccolithophores

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Coccolithophores tend to occupy ecological environments with an intermediate degree of fertility, midway between the extremes represented by turbulent, nutrient-rich waters, which favour diatom growth, and stratified, nutrient-poor waters, where dinoflagellates and other flagellates dominate (Margalef, 1978).

Studies of the distribution of extant coccolithophores in well-stratified, summer Mediterranean waters have shown that the different forms of *Helicosphaera carteri* inhabit different water depths. The heterococcolith form is associated with a relatively nutrient-rich DCM (Deep Chlorophyll Maximum) layer, located within the nutricline, whilst the holococcolith form inhabits the impoverished upper water levels (Cros, 2001). An interpolation of these *Helicosphaera* data, within the conceptual model of Margalef's Mandala, supports the idea (Houdan *et al.*, 2006) that the diploid heterococcolithophores and the haploid holococcolithophores might be exploiting a range of trophic environmental situations, with ecological niches closer to those of diatoms for heterococcolithophores and to those of dinoflagellates for holococcolithophores. Thus, it can be hypothesised that the haplo-diploid versatility of coccolithophores represents a survival strategy in a changing ecological environment.

### References

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