



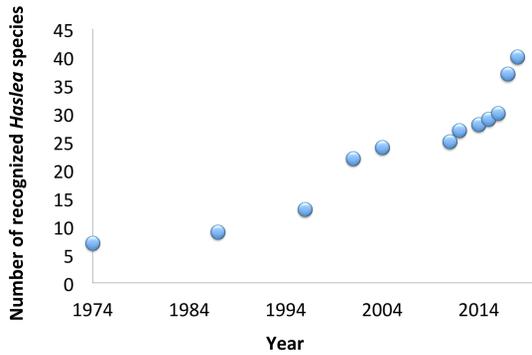
The genus *Haslea*, new marine resource for biotechnology and aquaculture?



Jean-Luc Mouget¹ & Rupert G. Perkins²

¹ FR CNRS 3473 IUML, Mer-Molécules-Santé (MMS), Université du Maine, Ave O. Messiaen, 72085 Le Mans cedex 9, France.
² School of Earth and Ocean and Sciences, Cardiff University, Cardiff, UK

The genus *Haslea* is a taxonomic unit of pennate diatoms defined by R. Simonsen in 1974. The total number of recognized *Haslea* species has increased with time and researchers' efforts. The genus is yet underexplored and exploited.



The genus *Haslea* type species is *H. ostrearia*, a tychoipelagic/benthic/epiphyte organism that produces marennine, a water-soluble blue-green pigment responsible for the greening of oysters in Western France.



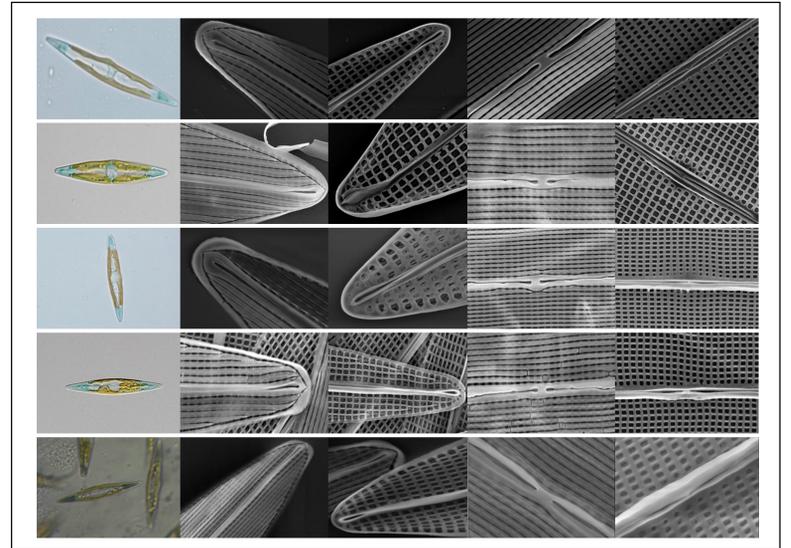
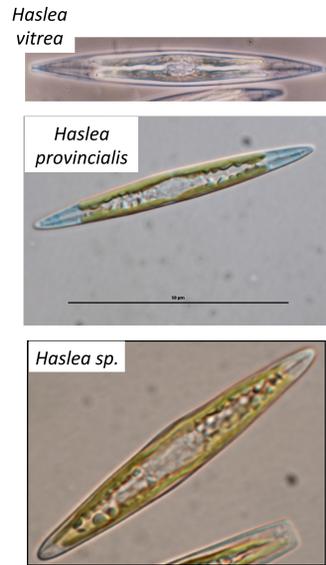
Green oysters



Haslea ostrearia

Regarding diatom morphology, the genus *Haslea* refers to fusiform or lanceolate cells with a frustule made of two valves, each presenting straight striae, both transversally (transapical striae) and longitudinally (apical striae).

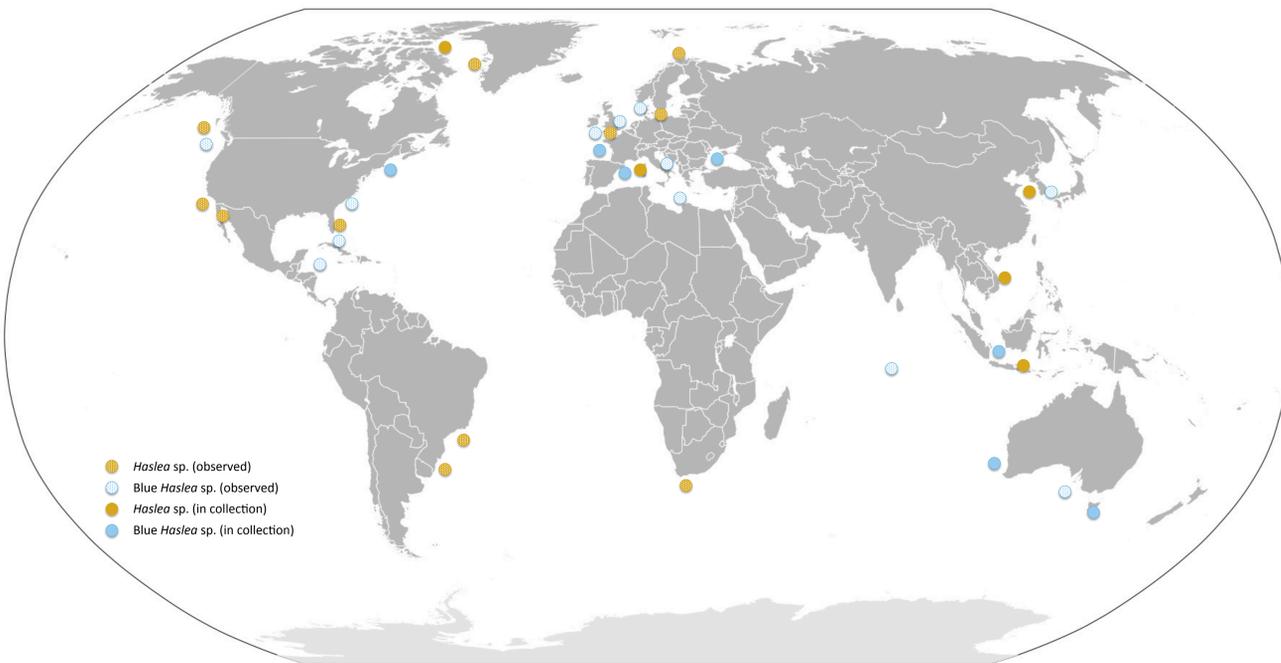
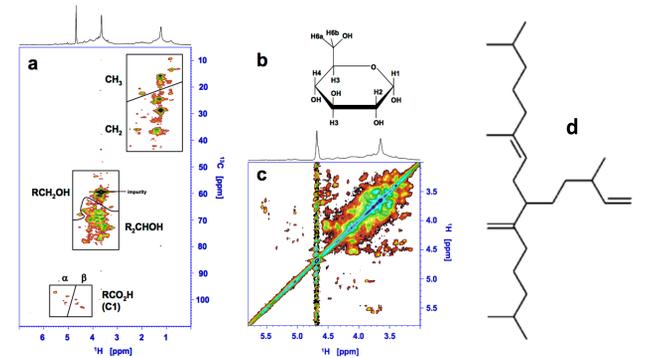
Characteristically, *Haslea* frustule valves present a different aspect when comparing their external and internal surfaces. The former presents continuous longitudinal fissures, the latter is perforated by areolar, square to rectangular openings, forming a grate. These two layers are tied together by longitudinal rows of columns (typical sandwich-like structure).



The blue *Haslea* biodiversity

Haslea species are characterized by specific secondary metabolites, e.g., marennine-like pigments^{a-c}, terpenoids (haslenes, highly branched isoprenoids^d). Some of these molecules have been isolated and identified but the chemical structure of others has to be investigated.

GHaNA H2020-MSCA-RISE-2016 (Marsh 2017 – February 2021)



Worldwide observations of *Haslea* species

The funding of GHaNA will address specific scientific, societal and economic issues, encompassing : (1) the exploration of marine biodiversity, (2) the selection of best strains of *Haslea* to maximize productivity and maintenance, (3) the design of dedicated photobioreactors and culture systems, (4) the set-up of biorefinery process to fractionate marennine-like pigments and other high-value products, (5) their characterization and potential use in biotechnology, (6) the assessment of their biological activities, stability and cytotoxicity, and (7) the application in aquaculture (antimicrobial agents), food and cosmetics (pigments).

The project GHaNA (The Genus *Haslea*, New marine resources for blue biotechnology and Aquaculture) is a H2020 research program, aimed to determine the biological and chemical diversity of *Haslea* diatoms.

The consortium, co-lead by Le Mans Université (France) and Cardiff University (UK), is composed of 21 public - academic partners, and one private partner.

These partners have a multiple expertise, a long experience and track record of work on *Haslea* species.

- Antimicrobials, aquaculture
- Banks of strains, strain maintenance
- Bioresource: biodiversity, cemo-diversity
- Blue biotechnology - cosmetics
- Ecophysiology, photobiology
- Genomics - phylogeny
- Life cycle - reproduction
- Marennine-like pigments
- Photobioreactors - process engineering
- Screening for high-value compounds



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