

THE BLUE DIATOMS FROM THE GENUS *HASLEA*: AN OVERVIEW

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The study of the blue diatoms from the genus *Haslea* is an arcane topic, due to investigations being restricted to the only species *Haslea ostrearia* (Gaillon/ Bory) Simonsen. This diatom, first observed in the early 19th century, has the peculiar ability to produce a non-photosynthetic blue pigment, the so-called marennine. This pigment's name refers to the French region of Marennes-Oléron, a place of intense oyster farming. In the ponds used for oysters' fattening, the releasing of marennine can turn water's color to green. By filtering the seawater, oysters fix marennine onto their gills, turning them green, a phenomenon which results in an increase in the bivalve's price.

During the last 5 years, several new species of the genus *Haslea*, all able to produce blue pigments, have been discovered around the world. The molecular phylogenies obtained using ITS1-5.8S-ITS2, partial *cox1* and *rbcl* markers have shown that blue diatoms belong to a single cluster of species, sometimes clearly separated from some non-pigmented species of the same genus, as evidenced by the *rbcl* marker.

For *H. ostrearia* and two of the species newly described, sexual reproduction has been studied. This, alongside with the preliminary molecular characterization, led to the investigation of the mitochondrial inheritance during auxosporulation in *H. ostrearia*, which proved to be uniparental. The diatom *H. ostrearia* has been revealed an interesting model, both because of its uncommon blue pigment's synthetic pathway and of its dioecious character, and a genomic approach has been considered.

In addition, diatom's blue pigments displayed several biological activities, including antibacterial, antifungal, allelopathic, antiviral, antiproliferative, antioxidant properties, leading us to hypothesize putative valorizations.