

Towards making diplomemids model heterotrophic nanoflagellates

Aleš Horák

Laboratory of Evolutionary Protistology, Biology Centre, Czech Academy of Sciences

Heterotrophic nanoflagellates (HNF) are a diverse and abundant part of the global plankton responsible for energy transfer to higher trophic levels. Recent global big data surveys have shown that the previously overlooked discobid clade, the diplomemids, constitutes one of the major HNF groups. Despite their obvious importance to the global ocean ecosystem, the biology of diplomemids is still largely unknown. Over the past decade, we have shown that their diversity and abundance are real, and we have uncovered factors that determine their global distribution in planktonic communities, including putative interaction partners. We show that diplomemids have very diversified metabolism capable of utilizing various energy sources, enriched by numerous horizontal gene transfers from prokaryotes, as well as several unique ultrastructural features that contribute to their ubiquity. On the other hand, the broad repertoire of bacterial endosymbionts has no obvious impact on their biology and/or genome. The complete genome and the existing transformation system of *Paradiplomema papillatum* promise to establish diplomemids as a model heterotrophic nanoflagellates.