

## Response

to doctoral dissertation of Davidovich Nickolai Alexandrovich "Reproduction biology of diatom microalgae" forwarded for receiving scientific degree of Doctor of Biological Science with specialty 03.02.01 - Botany

Respected Members of the Dissertation Council of the Moscow State University,

Let me start with expression of my feelings related to this response letter, I feel honoured to have a possibility to respond to the summary of Nickolai Davidovich doctoral dissertation and I am writing it with great pleasure. I met Nickolai Davydovych first in 2004 when he has attended International Diatom Symposium organized by my research team in Międzyzdroje. This first meeting did not result in close cooperation, we both needed nine year more to start our long term and very fruitful scientific cooperation between the Karadag Laboratory and the Palaeoceanology team, Institute of Marine and Environmental Sciences, University of Szczecin and between the two of us. Definitely my visit to Karadag in 2013 and to the Laboratory and culture collection of Nickolai Davidovich resulted in undertaking close research cooperation between the two research teams. In short, Nickolai Davidovich is my good colleague and research fellow in diatoms. What I especially appreciate in Nickolai Davidovich is his vast experience in the diatom life cycle or more broadly in diatom biology. I am also grateful for his share of this knowledge with my students and PhD students. In my response I am not going to analyse his output as the papers have been published and underwent the peer review process. Let me allow to characterize briefly Nickolai Davidovich and his research from more personal point of view.

Nickolai Davidovich developed in Research Station in Karadag an unique research infrastructure, multiple strain of diatom collection. With these resources his team is able to perform experiments in reproductive biology of diatoms from freshwater and marine habitats. The collection also covers the very broad range of geographic locations of the habitats studied. Therefore, in his experiments he can post questions and answer really fundamental questions in sciences about the life cycle and reproduction of diatoms. The experiments require highest degree of patients, long time, sometimes, yearlong observations and are unique for the modern science. I dare to say that at present it is only the Karadag Laboratory in the world where the crossing experiments are routinely performed and am happy that at least one of my PhD students has been trained by Nickolai Davidovich and can organize and perform such experiments in Szczecin University. The research of Nickolai Davidovich is highly innovative and allows to reconstruct the life cycle of numerous diatoms including some representative of toxic genus of *Pseudo-nitzschia*, the Eurasian representatives of *Ulnaria ulna* or world-wide distributed representatives of *Haslea ostrearia* and *Nitzschia longissima* group. With his approach such fundamental questions are answered in terms of species distribution and their biogeography. Our cooperation involves use of molecular markers and genomics in phylogeny of the genera and species studied and seemingly auxosporulation and crossing experiments have the priority in delimitation of species limits.



No wonder that Nickolai Davidovich with such an expertise in science is highly demanded as a partner in scientific projects. Here I would like to mention one project funded by National Science Centre in Cracow (project no. 2012/04/A/ST10/00544) and project MSCA-RISE Horizon 2020 - Research and Innovation Staff Exchange, proposal number: 734708, proposal acronym: GHANA (duration 48 months) with the title: The Genus *Haslea*, New marine resources for blue biotechnology and Aquaculture. He also has in his CV international projects funded by either European Commission or French resources, to mention: (PHC DNIPRO, 2007-2008) and the FP7 BIOVADIA (2011-2015). With the mentioned resources he has jointly made a significant contribution to the biology, biogeography and phylogeny of marine benthic (rather rarely planktonic) diatoms world-wide. The effects of our cooperation are numerous publications and at least several papers under preparation or nearly ready to submit. Papers have been published in renowned journals and examples include: Nature Scientific Reports, Phycologia, Journal of Phycology and European Journal of Phycology. One aspect of Nickolai Davidovich research requires a highlight, this is his contribution in developing our newest understanding of blue *Haslea* species. Without his contribution, I am afraid, we would not be able to answer questions related to the life cycle, biodiversity, biogeography of these taxa peculiar and showy due to their marennine - blue pigment content. The blue *Haslea* projects are ongoing and I am sure to the already established two new to science species *H. karadagensis* and *H. provincialis* several new *Haslea* species will be described. The blue diatom problematics is intriguing as it bears some aspects of applied science due to the extremely interesting properties of the blue pigment marennine from which these diatoms gain their blue colour in natural habitats and in the culture.

What I would like to stress in this short response, Nickolai Davidovich is dedicated to his research and especially to his beloved Crimean diatoms in Black Sea waters surrounding the Karadag Research Station. In his science philosophy coded is patience and built through his exemplary knowledge on diatom life cycle makes talks on science with him very interesting. And indeed, we spent hours and have very interesting talks about science and life. What I specially would like to stress Nickolai Davidovich is a very good colleague on which one can always relay.

To summarize, I have no doubt that doctoral dissertation of Nickolai Alexandrovich Davidovich is an important scientific contribution and significantly expands the existing knowledge on diatom biology. In my opinion Nickolai Alexandrovich Davidovich merits receiving a scientific degree of Doctor of Biological Sciences in Botany. I give him my full and unconditional support and expect further fruitful scientific cooperation.

Sincerely

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