

המכון למדעי החיים
ע"ש אלכסנדר סילברמן
האוניברסיטה העברית בירושלים



The Alexander Silberman
Institute of Life Sciences
The Hebrew University of Jerusalem

המחלקה למדעי הצמח והסביבה
קרית אדמונד ספרא
גבעת-רם, ירושלים 9190401
פקס (02) 6584425

Department of Plant and Environmental Sciences
Edmond Safra Campus
Givat Ram, 9190401, Jerusalem
Fax: (02) 6584425

April 7, 2018

To: Prof. In. Jan Vymazal
Head of the habilitation commission
Faculty of Science
Charles University, Prague

Re: Habilitation thesis of Dr. Linda Nedbalová

Dear Prof. Vymazal,

It is a great pleasure for me to write this letter to support the promotion of RNDr. Linda Nedbalová, Ph.D. toward the title of Assistant Professor, based on the habilitation thesis entitled: "Diversity, ecology and ecophysiology of algae and cyanobacteria from extreme environments", submitted to the Charles University, Prague.

I have read the thesis in-depth, both the introduction section and the 29 research papers attached, and I am impressed by the broad scope, by the quality of the research work performed by the candidate, and by the excellent way the thesis was presented.

In the Preface (p. 5 of the thesis), Dr. Nedbalová wrote: "Although I feel that my field is phytoplankton ecology and limnology, I was very happy to meet experts in different disciplines, mainly molecular phylogenetics, taxonomy, biochemistry and geochemistry". For me this sentence sums up many of the qualities of the work. Dr. Nedbalová has made significant contributions to all these fields, while always keeping the central goal of understanding the extreme ecosystems studied. She was fortunate to have these many collaborations, and she fully exploited the opportunities opened to her, which resulted in many impressive papers.

To learn more about Dr. Nedbalová's work I looked at the record of her publications in ISI Web of Science. There I found 60 publications listed, on the average cited more than 10 times, and an h-index of 15, which is fairly high for a relatively young scientist. Out of the 29 research papers included in the thesis, 23 are listed by ISI. It is interesting to note that the most highly cited papers authored by Dr. Nedbalová (most of which date from the years 2006-2013) were not included in the habilitation thesis. In fact, only one of Dr. Nedbalová's ten most cited papers was reprinted in the thesis (Part I-5, 25 citations, no. 5 in the ranking of the most cited papers). This shows that the work presented in the habilitation thesis represents only part of Dr. Nedbalová's scientific activity. To my

opinion she made the right choice by selecting only part of her studies to present a coherent thesis.

The thesis centers on the views of a limnologist – plankton ecologist on diverse extreme environments: cold, acidic, and (for one paper) hot. Most papers deal with the ecology of cold lakes, the biology of coloured snow, and acidic lakes. A single study presents data on thermophilic algae (*Galdieria* in burning coal spoil heaps). Many of these studies were based on field work, often under difficult conditions, as well on laboratory studies.

The groups of organisms studied by Dr. Nedbalová are very diverse: cyanobacteria, other bacteria (in a short paper on aerobic anoxygenic phototrophic bacteria), green algae, diatoms, dinoflagellates, and even invertebrate animals (fairy shrimps). Extremophile cyanobacteria and green algae are the groups explored most in-depth in the thesis.

The studies presented in the thesis show the candidate's expertise with a great variety of techniques:

- Limnological field work.
- Taxonomy of algae and other organisms, based both on classical, morphology-based methods and on and molecular approaches based on DNA sequence analyses.
- Analysis of biogeography and endemism.
- Physiological studies of photosynthetic organisms, including also molecular studies of the photosynthetic system at low temperature based on analysis of the D1 protein of photosystem II.
- Chemotaxonomy and analysis of cellular components of special interest: lipids, including identification of unique long-chain and branched fatty acids and lipidomics studies, and carotenoid chemistry. Methods used include HPLC, mass spectroscopy techniques and Raman spectroscopy.
- Aspects of the potential biotechnological exploitation of psychrophilic algae that have a high content of polyunsaturated fatty acids.

Looking at the lists of authors of the 29 research papers presented, I find many papers for which Dr. Nedbalová is the leading author, papers based on work by the students in her research group, as well as joint papers with different collaborating groups. All this shows a high level of scientific activity throughout the years in which Dr. Nedbalová has been an independent researcher at the Charles University.

Summarizing: based on the thesis presented I gladly recommend promotion of Dr. Linda Nedbalová to the rank of “docent” (associate professor) at the Charles University.

Sincerely,

Prof. Dr. Dr.h.c. mult. Aharon Oren

e-mail: aharon.oren@mail.huji.ac.il