



Přírodovědecká
fakulta
Faculty
of Science

Jihočeská univerzita
v Českých Budějovicích
University of South Bohemia
in České Budějovice

OPPONENT'S REVIEW ON BACHELOR THESIS

Name of the student: Elisa Frank

Thesis title: Origin of resistance against desiccation and cryoinjuries in soil crust microalgae of High Arctic

Supervisor: prof. Ing. Josef Elster, Ph.D.

Referee: doc. RNDr. Linda Nedbalová, Ph.D.

Referee's affiliation: Faculty of Science, Charles University

	Point scale ¹	Points
(1) FORMAL REQUIREMENTS		
Extent of the thesis (for bachelor theses min. 18 pages, for masters theses min. 25 pages), balanced length of the thesis parts (recommended length of the theoretical part is max. 1/3 of the total length), logical structure of the thesis	0-3	3
Quality of the theoretical part (review) (number and relevancy of the references, recency of the references)	0-3	3
Accuracy in citing of the references (presence of uncited sources, uniform style of the references, use of correct journal titles and abbreviations)	0-3	3
Graphic layout of the text and of the figures/tables	0-3	3
Quality of the annotation	0-3	3
Language and stylistics, complying with the valid terminology	0-3	3
Accuracy and completeness of figures/tables legends (clarity without reading the rest of the text, explanation of the symbols and labeling, indication of the units)	0-3	2
Formal requirements – points in total		20
(2) PRACTICAL REQUIREMENTS		
Clarity and fulfillment of the aims	0-3	3
Ability to understand the results, their interpretation, and clarity of the results, discussion, and conclusions	0-3	3
Discussion quality – interpretation of the results and their discussion with the literature (absence of discussion with the literature is not acceptable)	0-3	3
Logic in the course of the experimental work	0-3	3
Completeness of the description of the used techniques	0-3	3

¹ Mark as: 0-unsatisfactory, 1-satisfactory, 2-average, 3-excellent.

Experimental difficulty of the thesis, independence in experimental work	0-3	3
Quality of experimental data presentation	0-3	3
The use of up-to-date techniques	0-3	3
Contribution of the thesis to the knowledge in the field and possibility to publish the results (after eventual supplementary experiments)	0-3	2
Practical requirements – points in total		26
POINTS IN TOTAL (MAX/AWARDED)	48	46

Comments of the reviewer on the student and the thesis:

The bachelor thesis of Elisa Frank is focused on the characterisation of diversity and ecophysiology of soil crust microalgae in the High Arctic. Although biological soil crusts play an important ecological role not only in polar ecosystems, our understanding of their structure and functioning is still limited. This thesis is a part of a complex project that aims to track the diversity and origin of resistance against desiccation and cryoinjuries in this microalgal group, and the results presented in the thesis will certainly contribute to further development of this research area.

I have to appreciate in particular that Elisa applied a wide array of methodological approaches to fulfil the aims of the thesis, she also participated in field sampling and measurements. An important part of the thesis deals with testing of various protocols of fluorescent staining aiming to rigorously assess cell vitality. Since this methodology has not been fixed for soil crusts microalgae, yet, the outcome of the testing was not successful. However, I have to stress that the study of soil crusts presents many methodological problems in general. Therefore, I think that Elisa's pilot results represent a good starting point for further studies. From the point of view of formal requirements, the thesis is excellent. Also, the quality of the discussion proves the above average ability to understand and interpret the results.

Remarks:

- there were some minor formal issues – some figures are not referenced in the text
- the title of the thesis is a bit misleading as it does not reflect the actual aims
- on my opinion, the taxonomic classification of microalgae based of pigments presented in Table 1 is not suitable - the selection of an applied phycology reference was not the best decision for the purpose of this thesis

Suggestions and questions, to which the student has to answer during the defense.

Mistakes, which the students should avoid in the future:

Questions:

- 1/ In relation to diversity assessment of microalgae, it is not clear, if the data presented in Figure 7 represent numbers of morphotypes within each taxonomical group or their abundances. Could you please clarify this?
- 2/ At the low altitude site, you have found a high diversity of the cyanobacterium *Microcoleus*.

Could you explain, which morphological traits were used to distinguish particular morphotypes?

3/ The values of maximum quantum yield in the vitality tests were rather high. Do you think that field values can reach similar values?

4/ How do you interpret the effects of inoculation dose on the physiological performance of algae in the vitality test?

Conclusion:

In conclusion, I r e c o m m e n d

the thesis for the defense and I suggest the grade 1.²

In Prague date 14 September 2023

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signature

² You can suggest a grade, which can be modified during the defense based on the presentation. However, if the reviewer is not present at the defense, the grade will not be counted. Grades: excellent (1). Very good (2), Good (3), Unsatisfactory/failed (4).