



## OPPONENT'S REVIEW ON BACHELOR/DIPLOMA\* THESIS

Name of the student: Kerstin Hinterndorfer

Thesis title: Content of pigment cofactors in photosynthetic proteins upon illumination-induced xanthophyll cycle in eukaryotic alga *Nannochloropsis oceanica*.

Supervisor: RNDr. Radek Litvín, Ph.D.

Referee: RNDr. Ján Štěřba, Ph.D.

Referee's affiliation: Institute of Chemistry, Faculty of Science, University of South Bohemia

	Point scale <sup>1</sup>	Points
<b>(1) FORMAL REQUIREMENTS</b>		
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	2
Graphic layout of the text and of the figures/tables	0-3	2
Quality of the annotation	0-3	3
Language and stylistics, complying with the valid terminology	0-3	2.5
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	3
<b>Formal requirements – points in total</b>		<b>18.5</b>
<b>(2) PRACTICAL REQUIREMENTS</b>		
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

\* Choose one

<sup>1</sup> Mark as: 0-unsatisfactory, 1-satisfactory, 2-average, 3-excellent.

Completeness of the description of the used techniques	0-3	3
Experimental difficulty of the thesis, independence in experimental work	0-3	3
Quality of experimental data presentation	0-3	2
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	3
Practical requirements – points in total		26
<b>POINTS IN TOTAL (MAX/AWARDED)</b>	<b>48</b>	<b>44.5</b>

### Comments of the reviewer on the student and the thesis:

The thesis is very nicely written, even though it contains the usual mistakes present in bachelor theses – missing words, incorrect words, extra spaces, incorrectly used commas. Still, compared to some other theses, this work is written in a very nice style and language, it is easily understandable (if you will not get lost in all the PS, LHC, pigments etc.) 😊.

In all texts you should always use the same style – this includes the language, stylistics, citations etc. Therefore, you should decide if you are using the Oxford comma or not and do it in the whole text the same way. This also applies to the writing of scientific terms and names – e.g. state one vs State 1? The same for two vs 2.

You should be aware of the different use of a hyphen (-) and a dash (–), together with the use of spaces around these two different characters. You should use a non-breaking hyphen and non-breaking space when needed (e.g. -80 °C freezer on page 14).

You should learn the writing of spaces between the number and the unit (for example the difference in the meaning of 20°C and 20 °C, 59% and 59 %).

The size of the used figures is often too big, both seen in Introduction and Results – such as the spectra (Figs 11-16).

Aims are written usually as a separate section

You are also discussing your results already in the Results section; you should do it in the Discussion.

References:

The dot is written after the cited reference, not before (e.g. ... of the earth. [1]).

Article titles are either written in capital letters or not – you cannot mix these two styles.

Latin names of organisms are written in italics even in references.

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

#### Mistakes, which the students should avoid in the future:

I have a few questions for the students, which should be answered during the defence.

- 1) Illumination treatment – you had illumination and dark groups. The illumination group was then of course illuminated and thus processed further for up to 2 hours and then centrifuged; on the hand, the dark group was immediately frozen. Are you sure these two groups are comparable? The dark group was not processed for that extended time, and thus different proteins and metabolites could be produced in

- the culture.
- 2) 2.3 – Is the 10x dilution correct for the used protease inhibitor? Did you dissolve one tablet in 10 ml?
  - 3) 2.8 – you directly used the extracts for HPLC or mixed and dried (concentrated) them?
  - 4) Figs. 9, 10 – what are the minor peaks prior peak 7? (19-20 min)
  - 5) Tab 4, Fig. 17 – how many times was the experiment done, how does the figure look like with error bars? Was a statistical analysis done (e.g. in relation to your statement on not changing pf the sum of xanthophylls)?
  - 6) 3.2 – Could you show us the pictures of the gradients (dark vs illuminated) from the 3 + 3 experiments?
  - 7) You mention insufficient extraction of chlorophyll during thylakoid membrane extraction. Is there a way to check, how efficient is this extraction prior further analyses?

**Conclusion:**

In conclusion, I

**r e c o m m e n d / ~~do not recommend~~\***

**the thesis for the defence and I suggest the grade 1.<sup>2</sup>**

In České Budějovice date 7. 9. 2018

  
signature

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<sup>2</sup> 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).