



Přírodovědecká
fakulta
Faculty
of Science

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

OPPONENT'S REVIEW ON BACHELOR/DIPLOMA* THESIS

Name of the student: Teodora Nazare

Thesis title: Analysis of repeat content in the genome of green algae and early land plants.

Supervisor: Abdoallah Sharaf Ph.D.

Referee: Laura Avila Robledillo Ph.D.

Referee's affiliation: Biology Centre of the Czech Academy of Sciences, Institute of Plant Molecular Biology, České Budějovice.

	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	3
Formal requirements – points in total		21
(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	2
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

¹ 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	2
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		24
POINTS IN TOTAL (MAX/AWARDED)	48	45

Comments of the reviewer on the student and the thesis:

This thesis characterizes the landscape of repetitive elements in the genome of 12 species. The species analyzed belong to different lineages, from unicellular green algae to land plants. Through this work, the variability of repeats, as well as the abundance of each element, is analyzed under their phylogenetic context. The results reflect a high variability of the repeat content in different lineages, and a correlation between the genome size and the repeat content is found. These findings allow the author to infer that the repetitive fraction as well as its evolutionary dynamics are in a close relation with the genome size.

The thesis is well organized and satisfies the formal criteria. The author properly justifies the selection of the species analyzed and take into account the limitations of the available data. Moreover, the aims of the work are well established and addressed along the thesis. The results section perfectly reflects the output of her work and summarizes, often throw different approaches, the main findings. Finally, regarding discussion and conclusions, perhaps some clarification is needed for some paragraphs (Discussion, 2nd and 3rd paragraph).

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

Mistakes, which the students should avoid in the future:

1. In section 3.2 “Repetitive elements identification”, why such a low coverage (1x) is recommended?
2. In section 4.4 “rDNA and satellite repeats” you described how no satellite DNA has been identified in *K. nitens* and further in the discussion it is stated that “This may arise from difficulties of the software to detect highly variable tandem repeats in genomes not previously analyzed”, first, which kind of variability do you refer to (are there many satellites that are specie specific or do you think that is more that the tandem repeats in that genome are not homogeneous)?. Then, how do you envision this process to happen in a genome, based on what it has been speculated regarding the origin and evolution of satellite DNA?
3. In the discussion, the second paragraph, you stated that “The association of class II mobile elements with genic regions may impede their detection”. Could you elaborate on to what extent this association could impede the detection of a transposable element by RepeatExplorer2.

4. In the third paragraph of the discussion, when you comment on the distribution of class I and class II mobile elements, why the specie-specificity of Helitrons in this study confirms the theory that class II mobile elements are accountable for gene modifications by transposing into euchromatin regions (...) ?
5. How would you confirm the tandem organization of a satellite DNA family? (*In silico* and experimentally)

Conclusion:

In conclusion, I recommend the thesis for the defense and I suggest the grade 1.²

In Ceske Budejovice date 08.09.22

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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).