



## STATEMENT OF THE BACHELOR/DIPLOMA\* THESIS REVIEWER

**Name of the student:** Dariya Baiko  
**Thesis title:** PHYLOGENY AND HOST SPECIFICITY OF KIDNEY INFECTING MYXIDIUM SPECIES  
**Supervisor:** RNDr. Ivan Fiala, Ph.D.  
**Reviewer:** Jan Štefka  
**Reviewer's affiliation:** Biology Centre CAS

Point scale<sup>1</sup> Points

### (1) FORMAL REQUIREMENTS

<b>Extent of the thesis</b> (for bachelor theses min. 18 pages, for masters theses min. 25 pages), <b>balanced length of the thesis parts</b> (recommended length of the theoretical part is max. 1/3 of the total length), <b>logical structure of the thesis</b>	0-3	3
<b>quality of the theoretical part (review)</b> (number and relevancy of the references, recency of the references)	0-3	3
<b>Accuracy in citing of the references</b> (presence of uncited sources, uniform style of the references, use of correct journal titles and abbreviations)	0-3	3
<b>Graphic layout of the text and of the figures/tables</b>	0-3	3
<b>Quality of the annotation</b>	0-3	2
<b>Language and stylistics, complying with the valid terminology</b>	0-3	3
<b>Accuracy and completeness of figures/tables legends</b> (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>		20

### (2) PRACTICAL REQUIREMENTS

<b>Clarity and fulfillment of the aims</b>	0-3	3
<b>Ability to understand the results, their interpretation, and clarity of the results, discussion, and conclusions</b>	0-3	3
<b>Discussion quality – interpretation of the results and their discussion with the literature</b> (absence of discussion with the literature is not acceptable)	0-3	3
<b>Logic in the course of the experimental work</b>	0-3	3
<b>Completeness of the description of the used techniques</b>	0-3	2

\* Choose one

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

Experimental difficulty of the thesis, independence in experimental work	0-3	2
Quality of experimental data presentation	0-3	3
The use of up-to-date techniques	0-3	2
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		23

POINTS IN TOTAL (MAX/AWARDED)

48

43

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

The defended thesis presents new and interesting data and generally lacks formal or technical shortcomings. However, a few technical omissions occurred, for example when a degree of similarity between two lineages is compared (as high or low) a number should have been provided, otherwise the reader is left clueless.

The introduction reads very well and provides necessary information to understand the subject even for non-specialists in the Myxozoan research (such as the reviewer).

The methods were sufficiently explained with a few exceptions. I listed one example here (and a few more also using the questions below). The description of the purpose of statistical methods (on Page 18, t-test, PCA) was too succinct, the reader has to use his imagination to guess what data and why where processed. I only understood the purpose of the analyses when reading results, which is too late down the text.

Results are presented and discussed accordingly and provide new data on the hidden diversity of *Myxidium* and on the host preferences of different lineages. However, it is a pity that on the top of the statistical evaluation of the differences in spore morphology, no attempt was made to statistically quantify also the differences in host preferences (e.g. prevalences), which would provide a more rigorous baseline for discussion of the host specificity (e.g. Page 30, bottom). The data should be sufficient to compare preferences for at least some of the examined host species.

Nevertheless, despite these minor shortcomings the presented bachelor thesis is of high quality, very well prepared and when edited it should provide basis for a publishable manuscript.

**Suggestions and questions, to which the student has to answer during the defense. Mistakes, which the students should avoid in the future:**

- 1) Methods on Page 17 describe control PCR for fragments cloned into plasmids, which were then “miniprepmed” for sequencing. Why not sequence the plasmid DNA directly from the PCR’s? As it seems from the following paragraph (2.8) some plasmids were miniprepmed for sequencing and some were sequenced from the PCR?
- 2) Usage of the GTR+Gamma model in phylogenetic inference is mentioned on Page 18. Was this tested by any model selection approach?
- 3) How about alternative approaches to distinguish between accidental infection and true spores forming (discussion on Page 31, top). Do you think that qPCR, or maybe RNA seq of some developmental genes could provide insight, or is it not feasible?

4) Does the morphological data possess normal distribution? If the data in Fig. 8 were presented in a form of a scatterplot instead of the bar plot the informational content would be much higher (see e.g. Weissgerber et al, 2015, Plos Biol.). Then it would be clearer whether to use the T-test or some non-parametric test like Wilcoxon rank test.

5) There is an obvious polyphyly of the genus *Myxidium*. The discussion mentions the need to perform a revision of the morphology of the target species of the thesis - the roach infecting *M. cf. rhodei* vs *M. rhodei* from bitterling. But how about efforts to deal with the polyphyly of the whole genus, is it in the plan?

**Conclusion:**

**In conclusion, I ~~do not recommend~~\***

**the thesis for the defense and I suggest the grade <sup>2</sup> one or two depending on the student's presentation at the defense.**

In C. Budejovice      date      13.6.2017



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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.