



Přírodovědecká
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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:

Thesis title: Detection of Lyme disease spirochetes and *Borrelia miyamotoi* in samples of Czech patients

Supervisor: Rudenko, N.

Referee: Dr. Vett Lloyd

Referee's affiliation: Professor, Mount Allison University, New Brunswick, Canada

	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	2.5
Quality of the theoretical part (review) (number and relevancy of the references, recency of the references)	0-3	2.5
Accuracy in citing of the references (presence of uncited sources, uniform style of the references, use of correct journal titles and abbreviations)	0-3	1.5
Graphic layout of the text and of the figures/tables	0-3	2
Quality of the annotation	0-3	2
Language and stylistics, complying with the valid terminology	0-3	1
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	2.5
Formal requirements – points in total		14

(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	2.5
Discussion quality – interpretation of the results and their discussion with the literature (absence of discussion with the literature is not acceptable)	0-3	2.5

* Choose one

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

Logic in the course of the experimental work	0-3	3
Completeness of the description of the used techniques	0-3	2.5
Experimental difficulty of the thesis, independence in experimental work	0-3	3
Quality of experimental data presentation	0-3	2.5
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		22
POINTS IN TOTAL (MAX/AWARDED)		48 (36) ²

Comments of the reviewer on the student and the thesis:

This thesis describes the molecular testing for *Borrelia* sp. of human samples provided by healthcare providers from “problematic” patients. The work is well done, the methodology used is impressive and the findings are important. They should absolutely be published.

The thesis presents suitable background material, methodology, results and discussion.

The writing of the thesis is fair; there are errors of word usage and grammar, but I have seen worse from native English speakers. There were only two places where the intent of the text was unclear. The introduction would have benefited from a concluding paragraph, rather than just stopping when the page limit was reached. My only other formal presentation comment would be that citations need to be provided for each statement of fact presented, rather than a global citation or citations at the end of the paragraph, that might or might not encompass all the points made in that paragraph. That said, if it is the accepted style for this type of document, I withdraw that comment.

For the analysis of the material, I would have liked to see a figure or appendix of the chromatograms – particularly the ones noted as being problematic enough that re-sequencing was attempted. Methodologically, re-analyzing data until results consistent with expectation is a bit problematic. It can be done but needs to be robustly defended. There was no statistical analysis attempted in this work; justification was given for that although I have seen work with smaller sample sizes subjected to statistical analysis. There is no harm in being conservative, however, and not risking using statistics to over-interpret the data. Nevertheless, a comparison between the results produced here and the *Borrelia* species found in Czech ticks or companion or agricultural animals or wildlife would have been interesting. It would have bolstered the breadth of the work and allowed some basic statistical analysis. These are, however, relatively minor critiques. If I were reviewing this thesis for publication, I would make these critiques. That these are being made of a student work speaks to the strength of the work.

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

1. You state in the introduction that Bbss is considered to primarily cause arthritic symptoms, yet your results show that it is more often associated with neurological

² Enter the number of points awarded.

2. What could be the cause(s) of the gender differences in Bbss infections in the US and Europe and in the samples studied here?

3. Why were the samples classified as “problematic” by the hospital. What does that mean? Patients not responding to treatment? Unusual symptoms? Does this mean that the results are representative of most *Borrelia* infections in the Czech Republic?

4. Why is the presence of human DNA in samples more of a problem than, for example, canine DNA in a sample from a dog?

5. Can you fairly say that Bbss infection is predominant? What about primer specificity?

Mistakes, which the students should avoid in the future:

In thesis text, highlighted words without comment are errors of grammar or word choice.

Conclusion:

the thesis for the defense and I suggest the grade .3

New Brunswick, Canada, January 15, 2022

³ 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).

