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

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

**Name of the student:** Karolína Kubišová

**Thesis title:** Functional characterization of succinyl-CoA synthetase in the bloodstream form of *Trypanosoma brucei*

**Supervisor:** Alena Panicucci Zíková, PhD

**Referee:**

**Referee's affiliation:**

	Point scale <sup>1</sup>	Points
<b>(1) FORMAL REQUIREMENTS</b>		
<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	2
<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	2
<b>Graphic layout of the text and of the figures/tables</b>	0-3	2
<b>Quality of the annotation</b>	0-3	3
<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	2
<b>Formal requirements – points in total</b>		17
<b>(2) PRACTICAL REQUIREMENTS</b>		
<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	2

\* 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		25
<b>POINTS IN TOTAL (MAX/AWARDED)</b>	<b>48</b>	<b>(42)</b>

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

This thesis demonstrates sound research and methodology to investigate an intriguing biological question concerning the metabolism of the *Trypanosoma brucei* mitochondria. The explanations of the methodology and interpretation of the results demonstrates a thorough understanding of the experimental work as well as the relevant literature.

At 45 pages, this is a rather lengthy undergraduate thesis, due in part to the results of many different experiments, although parts of the method, results and discussion could be trimmed to reduce the page count.

Some of the abbreviations should be reviewed, SOC stands for super optimal broth 'with catabolite repression'. Also include 'form' so reader understands why 'procyclic trypomastigote form' is referred to as PF.

Figures should not have titles (Figures 9, 10 and 11). Also remove border outlines. Replace commas “,” with bullet points “.” to denote decimal places, which can otherwise lead to numbers being interpreted to mean 1000, not 1. Recommend elaborating slightly on some of the figure and table legends which are not used for presenting data, and avoid using abbreviations here. If one set of units are used in a table column, place them in parenthesis in the title row. In Figure 12, the bars of data in the graph figure 12 would look better if they started from 0.0, also a graphical legend (to the right) is not needed here.

Finally, remove product descriptions from the reference list.

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

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

You have mentioned that mitochondrial protein import is dependent on membrane potential being maintained in the intermembrane space. Can you describe some other effects from loss of mitochondrial membrane potential?

Elaborate on your lab's previous results on knockdown of succinyl-CoA synthetase subunit  $\beta$ , and its similarities to your own study.

What factors need to occur for successful homologous recombination when transfecting *T. brucei*?

Was statistical analysis performed for your quantitative results such as cell growth curves and RNA ratios?

How do you plan to proceed with antibody generation accounting for the apparent insolubility of your recombinantly produced protein?

You raise several possibilities for the discrepancy between your data and the study conducted by Zhang et al. What is your personal opinion on why this discrepancy occurred?

**Conclusion:**

In conclusion, I Dr. Michael John Hammond recommend the thesis for the defense and I suggest the grade 1.

11/09/2019

Michael Hammond

