



Přírodovědecká
fakulta
Faculty
of Science

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

OPPONENT'S REVIEW ON BACHELOR^{*} THESIS

Name of the student: Philipp Hebesberger

Thesis title: Sirtuins as regulators of apoptosis-induced proliferation in the eye of *Drosophila melanogaster*

Supervisor: RNDr. Alena Bruce Krejčí, Ph.D.

Referee: Mgr. Lenka Gahurová, Ph.D.

Referee's affiliation: Department of Molecular Biology and Genetics, Faculty of Science, University of South Bohemia

	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	2
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	2
Quality of the annotation	0-3	3
Language and stylistics, complying with the valid terminology	0-3	2
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
Formal requirements – points in total		17
(2) PRACTICAL REQUIREMENTS		
Clarity and fulfillment of the aims	0-3	2
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	2
Logic in the course of the experimental work	0-3	2

* 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	1
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		18
POINTS IN TOTAL (MAX/AWARDED)	48	35

Comments of the reviewer on the student and the thesis:

Introduction is full of information and definitely shows that the author put a lot of effort into collecting and summarizing all the facts. However, it is written in a very dense way, making it difficult to read. For the future, it would be beneficial if author focuses mostly on the information relevant for understating of thesis research, or at least emphasize these points – particularly the links between mitochondria complex I deficiency, mTOR, sirtuins and apoptosis. The information can be found throughout the text, but it would be beneficial to have it all connected at the end of introduction or in thesis aims. Again, for better clarity, it would be beneficial to add few brief sentences at the beginning of each result subchapter (especially 4.1) what was done, why it was done and how it was done. Results could be described in more detail, and the comparison of lines with both ND49-RNAi + Sirt-RNAi to controls (Sirt-RNAi + GFR-RNAi) was missing, as well as more detailed comparison with eye photos. Discussion was probably the strongest part of the thesis, I just think that the phrase “expression of Sirtuin-RNAi” is not correct – maybe better would be “downregulation of Sirtuin by RNAi”.

The number of results is not very large and basically consists only of absorbance measurements of many drosophila lines. This is supplemented by the images of drosophila eyes from each line, however, without any further measurements. Nevertheless, considering all the required crosses of drosophila lines and sample preparation procedures, I believe that the author did sufficient amount of laboratory work, although his experience with molecular biology techniques is limited. Despite mentioned issues, thesis is reasonably well written using suitable scientific language.

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

Mistakes, which the students should avoid in the future:

- I. Page 2 – Author claims that “nuclear mutations” are the major cause of Complex I deficiency. What does the author mean by “nuclear mutations” – mutations in genes of complex I encoded in the nucleus? Or any regions of nuclear DNA?
- II. Page 12 – there is a table showing drosophila lines used in the experiment. Third column contains not intuitive descriptions of the genotypes (at least for people not working with drosophila) that are not explained in the table legend or anywhere else. Could author choose one or few and describe that means what?
- III. What do the error bars in the graphs represent? Standard deviation, standard error of the mean, or anything else?

IV. In author's opinion (using his data), is Sirt-RNAi rescuing phenotype of smaller eyes to control levels, or not?

V. Considering different functions of individual Sirtuins, was it expected that all Sirtuins would rescue the phenotype to larger or smaller extent?

VI. Was the efficiency of individual Sirt-RNAi checked, or at least planned to be checked?

Conclusion:

In conclusion, I

r e c o m m e n d *

the thesis for the defense and I suggest the grade 2 (can be changed based on the defence)

In České Budějovice date 22.5.2023

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signature