



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

STATEMENT OF THE BACHELOR/DIPLOMA* THESIS REVIEWER

Name of the student: Bc. Vendula Flanderová

Thesis title: Krystalizační studie lytických enzymů bakteriofágů LysAm24, LysSi3 a LysSt11

Supervisor: Mgr. Tatyana Prudnikova, Ph.D.

Reviewer: Oksana Degtjarik, Ph.D.

Reviewer's affiliation: Department of Structural Biology, Faculty of Chemistry, Weizmann Institute of Science, Rehovot, Israel

	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
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	2
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	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	2
Formal requirements – points in total	21	16

* Choose one

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

(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	3
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	27	21
POINTS IN TOTAL (MAX/AWARDED)	48	38

Comments of the reviewer on the student and the thesis:

The Master thesis of Bc. Vendula Flanderová is focused on crystallization studies of three lytic enzymes from bacteriophages of the family Myoviridae: LysAm24, LysSi3 and LysSt11. The student was able to find optimal crystallization conditions for all three enzymes. The obtained crystals were subsequently measured at the synchrotron and the high-resolution structure of LysSi3 was obtained. The thesis is well structured, has clear aims that were mostly fulfilled by the author.

The results of the work supplemented with an additional experiments and structural analysis are publishable and can contribute to the development of the novel antimicrobial therapeutics.

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

1. In the Introduction the author claims that enzymes are widely used in environmental technologies and industry, but she refers only to haloacid dehalogenases. **Are there any other examples of the enzymes that are used for biotechnological applications?**
2. Fig. 10 shows the pictures of two different forms of LysAm24 crystals. This is interesting, because as I can justify from Fig. 11 and Fig. 12 two other enzymes were crystallized only in one crystal form. **What were the crystallization conditions for each of the crystal form of LysAm24? Were they the same of different ones? Were both types of the crystals tested for the diffraction, and if so to what space groups do they belong?**
3. Figs 20-21 shows the presence of strong ice rings on the diffraction images of LysSi3 and LysSt11, while LysAm24 has nice diffraction pattern without any indication of ice contamination. **Could the author comment on this? Was the concentration of PEG in the crystallization drop for LysAm24 different from the other enzymes? Was any cryoprotectant applied to the crystals before exposing them to the X-ray beam?**

Remarks

- On the p.1 the reference says Porter a kol., 2007, but in the reference list it is 2006.
- In the chapter 2.4 the author claims that the data collection time for the protein crystals is several hours or even days. It was probably true for the year 2008, when the paper the author is citing was published. Nowadays thanks to pixel detectors it takes in general few minutes.
- The title of the Chapter 2.7 says Lytic enzymes of bacteriophages LysAm24, LysSi3 and LysSt11, however there is no any information about LysSt11 enzyme, instead there is information about enzyme LysECD7.
- On the page 13, instead of Loeffler a kol., 1993 should be Loeffler a kol., 2001.
- On the page 17 in the Chapter 3.2.2 the author says that the concentration of

the enzyme was 5 mg/ml, and it wasn't changed, then 5 rows later it became 3.5 mg/ml. I guess the later is a mistake. The same repeats again on the p.18 for LysSt11 enzyme.

- p. 33, 38, 40 missing reference for the pdb code.
- p. 37 wrong reference after "rozliseni 1,6A".

Conclusion:

In conclusion, I

recommend / ~~do not recommend~~*

the thesis for the defense.

In **Rehovot** date **15.01.2021**



signature