

Jury Member Report – Doctor of Philosophy thesis.

Name of Candidate: Julia Piskunova

PhD Program: Life Sciences

Title of Thesis: Structural and Functional Analysis of Ribosomally Synthesized and Post-Translationally Modified Microcins from *Escherichia coli*.

Supervisor: Professor Konstantin Severinov

Chair of PhD defense Jury: Professor Yuri Kotelevtsev

Email: y.kotelevtsev@skoltech.ru

Date of Thesis Defense: October 27, 2017

Name of Reviewer: Timofei Zatsepin

I confirm the absence of any conflict of interest

(Alternatively, Reviewer can formulate a possible conflict)

Signature:



Date: 20-09-2017

The purpose of this report is to obtain an independent review from the members of PhD defence Jury before the thesis defence. The members of PhD defence Jury are asked to forward a completed copy of this report to the Chair of the Jury at least 30 days prior the thesis defence. The Reviewers are asked to bring a copy of the completed report to the thesis defence and to discuss the contents of each report with each other before the thesis defence.

If the reviewers have any queries about the thesis which they wish to raise in advance, please contact the Chair of the Jury.

Reviewer's Report

Reviewers report should contain the following items:

- Brief evaluation of the thesis quality and overall structure of the dissertation.
- The relevancy of the topic of dissertation work to its actual content
- The relevancy of the methods used in the dissertation
- The scientific significance of the results obtained and their compliance with the international level and current state of the art
- The relevance of the obtained results to applications (if applicable)
- The quality of publications
- The summary of issues to be addressed before/during the thesis defense

The study is devoted to well-known antibiotics – microcin B and microcin C. Julia clearly demonstrated that microcin C induces bacterial persistence that cut down its probable applications in clinic. The mechanism of persistence was thoroughly studied and she demonstrated that general scheme is close to previously known HipA with distinct differences. The result is negative in terms of practical applications but this study will help to save money for development of novel antibiotics. In case of microcin B, a structure-activity relationship studies revealed crucial residues for membrane transportation, binding to the target, etc. Novel and unexpected result is that microcin B analogs without oxazole/thiazole moieties are still active against gyrase. The data obtained in the study can be used in development of microcin B analogues with increased activity. Thus Julia performed a comprehensive study that provides new details on the mechanism of microcin B action.

The thesis is written in a classic way. Literature overview is solid and up to date.

The main problem is that the second publication (Activation of *Yersinia pseudotuberculosis* Trojan-horse peptide-cytidine antibiotic by the Tld protease) is poorly linked to the studies described in the thesis and is still not accepted for publication. Thesis defence will be possible only after acceptance of the manuscript and DOI number assignment. Also there is a good practice to read the manuscript after doc→pdf conversion as it helps to exclude unreadable parts.

I suggest attaching unpublished manuscripts to all theses; otherwise a reviewer has no chance to read them.

I consider this good thesis work.

Provisional Recommendation

☐ *I recommend that the candidate should defend the thesis by means of a formal thesis defence*

☒ *I recommend that the candidate should defend the thesis by means of a formal thesis defence only after appropriate changes would be introduced in candidate's thesis according to the recommendations of the present report*

☐ *The thesis is not acceptable and I recommend that the candidate be exempt from the formal thesis defence*