

Jury Member Report – Doctor of Philosophy thesis.

Name of Candidate: Maria Sokolova

PhD Program: Life Sciences

Title of Thesis: Functional and Structural Analysis of a Non-Canonical RNA Polymerase Encoded by Giant Bacteriophage AR9


Supervisor: Prof. Konstantin Severinov

Chair of PhD defense Jury: Prof. Yuri Kotelevtsev

Email: y.kotelevtsev@skoltech.ru

Date of Thesis Defense: 15 June 2018

Name of the Reviewer:

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|---|---|
| <p>I confirm the absence of any conflict of interest</p> <p>(Alternatively, Reviewer can formulate a possible conflict)</p> | <p>Signature:</p>  <p>Date: 14-05-2018</p> |
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The purpose of this report is to obtain an independent review from the members of PhD defense Jury before the thesis defense. The members of PhD defense Jury are asked to submit signed copy of the report at least 30 days prior the thesis defense. The Reviewers are asked to bring a copy of the completed report to the thesis defense and to discuss the contents of each report with each other before the thesis defense.

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 relevance of the topic of dissertation work to its actual content
- The relevance 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 Doctoral thesis of Maria Sokolova «Functional and structural analysis of a non-canonical multisubunit RNA polymerase encoded by giant bacteriophage AR9» is well written in English in traditional format and contains 5 chapters and 31 figures presented on 112 pages. It is a proper investigation in classical molecular biology of phage RNA polymerase of non-canonical structure. The novelty of this study lies in unusual property of nvRNAP to use uracil containing single strand DNA as promoter regions. The main results of the thesis are published in paper Sokolova et al NAR, 2017. M. Sokolova mastered a spectrum of molecular and biochemical methods which allowed her to purify the enzyme, to generate overproducents and to crystallize the core enzyme and the holoenzyme for xray and cryo-EM structural analysis. The importance of the research is reflected in citation of the paper which was published only a year ago. Obtained results might be important for development of anti phage reagents which may be applied in biotechnology. Three publications are of highest quality which is reflected in impact factor of the journals (3 to 10).

The thesis is very well written and the quality of the figures presenting the data is excellent.

Provisional Recommendation

I recommend that the candidate should defend the thesis by means of a formal thesis defense

I recommend that the candidate should defend the thesis by means of a formal thesis defense 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 defense