

Jury Member Report – Doctor of Philosophy thesis.

Name of Candidate: Aleksei Mironov

PhD Program: Life Sciences

Title of Thesis: Tissue-specificity and regulation of aberrant alternative splicing

Supervisor: Assistant Professor Dmitri Pervouchine

Name of the Reviewer: Dmitry Ivankov

I confirm the absence of any conflict of interest

(Alternatively, Reviewer can formulate a possible conflict)

Date: 06-09-2022

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

In the presented PhD thesis “TISSUE-SPECIFICITY AND REGULATION OF ABERRANT ALTERNATIVE SPLICING” Alexei Mironov accomplished genome-wide search and classification of tandem alternative splice sites (TASS) and unproductive splicing events (USE), explored their tissue-specific and cell-type specific expression, and investigated their regulation by RNA-binding proteins.

The two chapters devoted to the description of the results (Chapters 5-6) comprise a core of the thesis. The other chapters contain Introduction (Chapter 1), Background (Chapter 2), Thesis Objectives (Chapter 3), Materials and Methods (Chapter 4), Discussion (Chapter 6), and Conclusion (Chapter 7).

Chapter 5 is devoted to the finding new TASS, their classification, and their association with different tissues and cell-types as well as their regulation by RNA-binding proteins.

Chapter 6 is devoted to systematic analysis of human tissue transcriptomes from the GTEx project to detect concordant tissue-specific changes in alternative splicing of NMD. Alexei found 31 novel predicted examples of regulated USEs.

The results of the presented works are scientifically significant and comply with the international level and current state of the art. The work is valuable for fundamental research. The publications are of high quality, the number of publications suits the requirements for the publication-based PhD thesis.

The dissertation conforms to international standards. It has a clear structure; the topic corresponds to the actual content.

To summarize, I rate the PhD thesis of Alexei Mironov as interesting, important, of a high quality, and scientifically significant.

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