

Jury Member Report – Doctor of Philosophy thesis.

Name of Candidate: Alexander Tyshkovskiy

PhD Program: Life Sciences

Title of Thesis: Molecular Signatures and Mechanisms behind Lifespan Extensions

Supervisor: Prof. Philipp Khaitovich


Co-Supervisor: Prof. Vadim Gladyshev

Chair of PhD defense Jury: Prof. Mikhail Gelfand

Email: m.gelfand@skoltech.ru

Date of Thesis Defense: 23 October 2018

Name of the Reviewer: Brian Kennedy

<p>I confirm the absence of any conflict of interest</p> <p>No conflict of interest</p> <p>(Alternatively, Reviewer can formulate a possible conflict)</p>	<p>Signature:</p>  <p>Date: 15-10-2018</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

This is a very robust thesis involving transcriptomic or DNA methylation studies to identify gene expression changes in three separate contexts also highly linked to aging mechanisms. Each of the studies leads to important conclusions that will be of interest to the ageing field, for instance: (1) the presence of a senescence response in naked mole rats, albeit a blunted one in certain contexts; a thorough analysis of the mouse methylome during aging, establishing similar findings to human studies but also specific observations of interest; and (3) a comparison of the liver transcriptomic effects of many longevity interventions, showing shared and unique changes. All of the studies have the common theme of using large datasets and state-of-the-art analysis.

One co-first author publication has emerged from these studies, as well as a second author manuscript and another first author manuscript submitted. These are all likely to be published in high impact journals and therefore the publication record of Dr. Tyshkovskiy is very good. These manuscripts provide important datasets to investigators in the aging field and as such are likely to be highly cited.

The quality of writing in the thesis is very high, including in the introduction, which accurately summarizes the state of the field and sets the stage for the importance of the experimental studies in the thesis.

Perhaps most importantly, the importance of the genome level findings is highlighted effectively in each chapter by efforts to dig into specific pathways and interpret observed changes in the context of known aging mechanisms. This is fundamental to increasing the impact of the discoveries in the aging research community.

In summary, Dr. Tyshkovskiy should be allowed to proceed with his thesis defense and I look forward to an interesting presentation and discussion.

Provisional Recommendation

XXX 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

