

Jury Member Report – Doctor of Philosophy thesis.

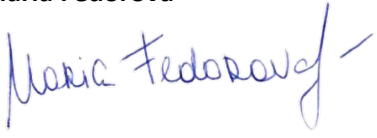
Name of Candidate: Aleksandra Mitina

PhD Program: Life Sciences

Title of Thesis: Role of breast milk lipid composition in postnatal brain development

Supervisor: Professor Philipp Khaitovich

Name of the Reviewer:

<p>I confirm the absence of any conflict of interest</p> <p>(Alternatively, Reviewer can formulate a possible conflict)</p>	<p>Signature:</p> <p>Maria Fedorova</p>  <p>Date: 11-11-2020</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

Doctoral thesis by Alexandra Mitina describes the comparative study of breast milk and postnatal brain lipid composition for a range of mammalian species including human, primates, bovids, and pig. The thesis are well written and include all necessary chapters – abstract, introduction, material and methods, results, and discussion. Large number of illustrations is also provided in results section to support presentation of obtained results. Thesis includes also a comprehensive list of cited literature. Overall, thesis structure is well balanced and provide all necessary information to support study rationale, aims, results, and conclusions.

The topic of the dissertation adequately reflects the content of the presented work.

Mitina used state-of-the-art modern mass spectrometry based technology to address lipid compositions at the level of complex lipids as well as free fatty acids release via basic hydrolysis for both milk and brain samples. Mass spectrometry based lipidomics is a leading methodology in the field of lipid analysis, thus the choice of the method used in the study of Mitina is very relevant and represent probably one of the best ways to address the aims of the study. Moreover, generation of “big” data produced by lipidomics approach requires application of sophisticated bioinformatics solutions both for lipid identification and statistical and chemometric analysis of obtained results. Such bioinformatics tools were successfully used in the current study.

The results presented in the dissertation address complex biological and evolutionally questions, and thus of very high significance to the scientific community. Comparative evolutionary approach as well as correlation of two different types of biological samples is very innovative and unique in the field. The study by Mitina is no doubt represent a significant development in our knowledge on mammalian biology and evolution.

Part of the presented results were already published in peer-reviewed journal (BMC Evolutional Biology) highlighting high level of the obtaining data.

Overall, I enjoyed reading the thesis of Alexandra as a very modern and interesting study and strongly recommend the this thesis for the formal defense.

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