

## Jury Member Report – Doctor of Philosophy thesis.

**Name of Candidate:** Aleksandra Galitsyna

**PhD Program:** Life Sciences

**Title of Thesis:** Chromatin folding in individual cells

**Supervisor:** Professor Mikhail Gelfand

**Name of the Reviewer:** Peter Kharchenko

I confirm the absence of any conflict of interest



(Alternatively, Reviewer can formulate a possible conflict)

**Date: 18-09-2021**

*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

Aleksandra Galitsyna presents her work on analysis of genome folding in *D. melanogaster*, based on the analysis of both bulk and single-cell Hi-C data. Specifically, the work examines the dependence of TAD/compartments structure on lamins, the ability to predict TAD structure based on a limited set of pre-selected chromatin factors, and then examines signatures of TADs and the overall fold in single nuclei Hi-C measurements.

The contents of the thesis addresses the overall topic and largely succeeds in meeting the top-level goals set out in Chapter 3. The choice of the methods employed for most analysis is appropriate. The thesis is based on three main publications in two of which Aleksandra is a co-first author, and a method overview manuscript where she is the sole first author on scHi-C data. The publications are directly relevant to the thesis and present a wealth of analysis and results, which are of appropriate scope and scientific impact. One concern is that given multi-author efforts, from the thesis itself it is not entirely clear what aspects of the presented analyses were carried out by Aleksandra.

#### 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*