Skoltech
Skolkovo Institute of Science and Technology

Jury Member Report – Doctor of Philosophy thesis.

Name of Candidate: Alina Chernova

PhD Program: Life Sciences

Title of Thesis: Integrating high-throughput genotyping and lipidomic profiling for discovery of genetic determinants of cultivated sunflower seed oil content

Supervisor: Professor Philipp Khaitovich

Name of the Reviewer:

I confirm the absence of any conflict of interest (Alternatively, Reviewer can formulate a possible conflict)	**Signature:**  **Date: 29-12-2020**

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 revision of my review of a previous version of the thesis dated June 22, 2020).

This is a solid coherent study of the link between the lipidomic and genotypic properties of sunflower varieties. The author describes approaches for fatty acid and triglyceride profiling of oilseed crops, and integrates profiles with high-throughput GBS data from several hundreds sunflower varieties. This allows her to identify significant genotype-phenotype associations, indicating that selection for oilseed characteristics can be efficient, and providing hints for directing this selection.

The content of the thesis reflects its topic, and all used methods are appropriate. The results are novel, significant, and of potential applied value. The provided publications are in mid-tier journals, but I expect them to be well-cited. The work is prefaced by an extensive literature review. It is elaborate, systematic, well written and reads like a charm. Overall, the work has few mistakes and typos (and those I have spotted in the first review round have been fixed). The author's contribution to each of the chapters is described very clearly and in detail. For those chapters based on papers on which Ms. Chernova is not the first author, only the material is included that was actually based on her work.

Provisional Recommendation

X *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*