

Dissertation Review Form -for members of the Dissertation Commission-

Please write a review of the dissertation taking the following criteria into account, where appropriate:

- General remarks
- The significance and status of the dissertation in the field
- The sufficiency and quality of the material
- The adequacy of the methods used
- The validity of results
- The logic of the dissertation's structure
- The knowledge and use of literature in the field
- The project's contribution to the research area
- The author's input into the achievement of the dissertation results
- Language
- The shortcomings of the manuscript

Name of the PhD Candidate :Ms OLESYA KOLMAKOVA
Planned Date of Graduation : 23 September, year: 2015

Title of the Dissertation: MOLECULAR GENETIC IDENTIFICATION OF PLANKTONIC BACTERIA IN THE YENISEI RIVER BASIN AND EXPERIMENTAL STUDY OF THEIR BIOGEOCHEMICAL FUNCTIONS

Would you please elaborate upon your review with reference to the above mentioned criteria in the box below. Please add extra pages if needed

General remarks

This work belongs to the field of molecular ecology. Molecular ecology is one of the points of growth of modern ecology, which makes this dissertation particularly interesting and important not only in the context of this particular branch of ecology but also in a more general context of ecology as a whole.

The significance and status of the dissertation in the field

The dissertation is highly significant because research on molecular diversity of bacteria in the Yenisei River of such a spatial scale as the dissertation considers – three major biomes, namely, mountain taiga, plain taiga and forest-tundra and tundra with permafrost, all spreading over 1800 km along the river – has never been carried out.

The sufficiency and quality of the material

The material consists of three major components: field, experimental, and molecular. The field data represent samples collected from the Yenisei River. The scale of field research is most impressive, for it covers some 1800 km of the river's course and involves samples taken upstream and downstream of the five major tributaries of the Yenisei. The experimental data come from five nutrient enrichment experiments. The molecular data are obtained from both the field and the experimental material and thus penetrate the whole work. The quality of the data is very high; in particular, molecular methods rely on the most up-to-date technique of the next-generation sequencing (NGS).

The adequacy of the methods used

The research approaches and methodologies used in the work are fully adequate. These methodologies involve a wide range of molecular techniques, a set of modern statistical methods, including multidimensional scaling, and such classical hydrobiological experimental approach as nutrient enrichment experiments (here amino acids lysine, glycine and arginine were added). The combination of multiple and diverse methodologies has allowed the author to successfully solve the goals and objectives of her work.

The validity of the results

The dissertation combines adequate methods with a sound logic of the research. This combination produces valid results.

The logic of the dissertation's structure

The logic of dissertation is clear and transparent.

The knowledge and use of literature in the field

The literature sources relevant to the topic are covered very thoroughly, including most recent ones.

The project's contribution to the research area

The project's contribution to the research area is determined by the fact that this study is the first to find that microbial diversity reaches its maximum in the middle of the Yenisei River.

The author's input into the achievement of the dissertation results

The author had a paramount input into the achievement of the dissertation results, as can be seen from the fact that she is the lead author of the key paper that contains the dissertation results: Kolmakova, O.V., et al. 2014. Spatial biodiversity of bacteria along the largest Arctic river determined by next-generation sequencing. FEMS Microbiol Ecol 89: 442–450. I would like to note that this paper is published in a leading international journal.

Language

The author demonstrates a good command of the English language.

The shortcomings of the manuscript

The shortcoming is that the author does not cite her own papers in the List of References.

Name of the Dissertation Commission Member : Leonard V. Polishchuk

Chair / Function : Member

Date : 19.09.2015

Signature : *

** No signature required when submitted per email.*

Please send the completed form to the Head of the office of the Doctoral and Post-doctoral, Faculty Performance Evaluation Office Grigorieva O.A. e-mail: grigorieva_00@mail.ru, tel. +7 (391) 206-22-62, address: 79/10 Svobodny pr., Room P6-16, 660041 Krasnoyarsk, Russia