

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

The subject of the study under consideration was determination of species composition of planktonic bacteria of one of the biggest river of the World the Yenisei River basin by molecular genetic techniques. Another aim was estimation biogeochemical functions of bacteria using the experimental study of their consumption of certain types of specific organic substances. Both objectives are very ambitious and almost have no analogues in the science of the World.

The significance and the status of the dissertation can not be overestimated, as the use of modern approaches (especially methods metagenomics) raises bacterioplankton biodiversity research to a principal new level. In general, this research is extremely topical and important for the biological sciences.

One of the advantages of the work is that it is based on both extensive sampling of material in nature, and laboratory experiments in mesocosms.

The study is based on comprehensive material. Samples were taken at 10 sampling transects were located downstream and upstream of inflows of major tributaries of the Yenisei River. Each transect includes three sample sites: near the left bank, right bank and in the mainstream. Total number of micro-organisms which was found during the study (3022 OTUs (genetic "species")) is lasting achievement.

All methods used in the study are adequate to the assign tasks

All received during the review investigation results are well founded.

Structure and presentation of the material in the text of the thesis is quite logical.

In general the knowledge and use of literature in subject of consideration is quite enough.

The work absolutely brings honest contribution to the study of diversity and ecosystem function of bacterioplankton in fresh waters.

According to represented materials and publications the main results obtained by author personally.

Thesis is written in good, clear scientific language.

The shortcomings of the manuscript

As any big work the thesis is not without some shortcomings.

1). First of all, give rise to some doubt the analysis of data on alpha-diversity of planktonic bacteria. We do not consider that Shannon index using is successful in this case. This index is designed for independent random events and repeatedly criticized when applied to biological systems. In work under consideration the Shannon Index didn't get anywhere to analysis of alpha-diversity micro-organisms.

2). As mentioned before in general the knowledge and use of literature in thesis is quite enough. However in discussion of regularities of organisms' distribution in rivers it would be advisable to involve the river continuum concept (Vannot et al., Canad. J. Fish. Aquat. Sci., 1980. V.37: 130-137) and more data on environmental conditions of sampling sites.

These shortcomings nor in any way reduce the high mark, which deserves this work.

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Chair / Function

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Date September, 13 2015

Signature

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** No signature required when submitted per email.*