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Review Report

On M.N. Shmareva's (Poroshina) Dissertation Abstract "Novel Aerobic Methylophilic Bacteria from Saline Ecosystems" submitted in fulfillment of the requirements for the degree of Candidate of Science (Microbiology 03.02.03).

Single carbon (C₁) compounds commonly found in the environment include methane, methanol, methylated amines, halogenated methanes, and methylsulfonates. These compounds are of particular environmental concern as they contribute to the greenhouse effect, or are extremely toxic and are regarded as dangerous pollutants. Microbial oxidation of C₁-compounds is an important part of environmental carbon cycling. Methylophilic, a diverse group of bacteria capable of growth on C₁-compounds, are important members of many natural microbial communities. However a vast majority of methylophilic bacteria remains poorly characterized.

M.N. Shmareva's dissertation work was focused on the isolation and characterization of aerobic methanophilic bacteria inhabiting various saline natural and human-made ecosystems. Six novel microbial clades of methylophilic bacteria were isolated and formally described. The type strains were deposited to a variety of International Culture Collections (i.e VKM, DSMZ, JCM) and are available to scientific community for further physiological and genomic investigations.

M.N. Shmareva demonstrated that some of the newly isolated microbes accumulate PHB and ectoine. These methylophilic traits might represent interesting targets for biotechnological applications.

While in graduate school, M.N. Shmareva has obtained considerable practical experience. The array of approaches and techniques used in her work is impressive. She has six peer-review publications, and she is first author on four of them. Furthermore M.N. Shmareva has presented at numerous scientific conferences.

In summary, M.N. Shmareva's doctoral dissertation fulfills the "Awarding of Academic Degrees Policy for the degree of Candidate of Science, approved by the Russian Federation Government Decree N 842, September 24, 2013" and therefore M.N. Shmareva's application for Candidate of Science degree in the specialty 03.02.03 - Microbiology " has my strongest support.

Yours Sincerely,

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