

JOINT EVENT

4<sup>th</sup> World Congress and Expo on **APPLIED MICROBIOLOGY**&  
2<sup>nd</sup> International Conference on **FOOD MICROBIOLOGY**

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**Filamentous fungus *Podospora anserina*: Morphological and genomic changes within five years of submerged cultivation**Olga Kudryavtseva<sup>1</sup>, Ksenia Safina<sup>2</sup>, Igor Mazheika<sup>1</sup>, Georgii Bazykin<sup>2</sup>, Ekaterina Budanova<sup>1</sup>, Olga Vakhrusheva<sup>2</sup>, Olga Kamzolkin<sup>1</sup> and Alexey Kondrashov<sup>3</sup><sup>1</sup>Lomonosov Moscow State University, Russia<sup>2</sup>The Institute for Information Transmission Problems of the Russian Academy of Sciences (Kharkevich Institute), Russia<sup>3</sup>University of Michigan, USA

Microbiological cultures can undergo microevolution in laboratory conditions. The comprehensive study of this process is important not only from a fundamental point of view but it could help successfully adapt natural and genetically modified strains to specific or stressful conditions of industrial cultivation, that may be quite different in comparison with their natural habitats. In the present study, we observed genetic and phenotypic changes in ascomycetous fungus *Podospora anserina* grown at aerated liquid media more than 5 years by serial passages. *P. anserina* is coprophilous fungus living in nature on the dung of herbivores. Two initial strains were derived from individual mononuclear ascospores and became original for eight independent subcultures. Experimental conditions influenced dramatically on fungal morphology as well as on sexual reproduction, but constantly support the unlimited vegetative growth of mycelium. All subcultures being removed on agar medium at any time, as well as on dung agar, grow with the same rate as wild-type strains. Method of next-generation sequencing for whole genome analysis lets us revealed 142 point mutations fixed in experimental subcultures in total after 268 passages in liquid: 52 of them were identified as missense mutations, eight as nonsense, and 10 as frameshifts. Moreover, we have observed some examples of parallel evolution, the most impressive of which was the gene coding GTPase subunit alpha that was subjected to mutation fixation independently in seven subcultures. Functional annotation of found mutations indicates that some of them might be adaptive.

**Biography**

Olga Kudryavtseva graduated from Lomonosov Moscow State University in 2007, completed her PhD in 2011 with specialization in Mycology, and continues to work over there as a Research Scientist. She also conducted studies on fungal aging in collaboration with CNRS, Centre de Genetique Moleculaire, France. Currently, she teaches a laboratory course on Physiology of Fungi and leads long-term study on the evolution of fungal model. Since 2013 she is a regular Head of Subsection of Mycology and Algology as a part of annual International Conference for Students and Young Scientists "Lomonosov".

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