Alexander Petrovich Mylnikov (1952–2019)

On May 30, 2019 Alexander Petrovich Mylnikov passed away at the age of 66, after suffering from a severe illness for the last few years. He was a wonderful mentor, passionate scientist, and approachable colleague who worked tirelessly to promote biological science in Russia and made a number of highly valued contributions to the treasury of international Protistology.

Alexander Mylnikov was born on July 6, 1952 in the city of Kholmsk, Sakhalin Island, USSR. In 1956, Mylnikov’s family moved to Voronezh city in the southwestern Russia. Since his childhood, Alexander was fond of biology; he attended natural-science hobby groups and participated in school biology competitions. After graduating from the high school in 1969, he was admitted for Master studies at the Faculty of Biology and Soil Science of the Voronezh State University, which he graduated with honors in 1974. The topic of his diploma project was: “Experimental Observation of the Biology of Colourless Flagellate Bodo caudatus (Duj.) Stein, Bodonina Hollande”.

Since 1974, Alexander Mylnikov was working as a senior technical assistant and later as a junior researcher at the I.D. Papanin Institute for Biology of Inland Waters, Russian Academy of Sciences. In 1979, his research work at the institute culminated by the publication of the Ph.D. thesis entitled “The Biology of Colourless Flagellates in Polysaprobic Areas” at Leningrad (now Saint Petersburg) State University. After that, he continued to work at the Institute for Biology of Inland Waters as a research scientist, senior scientist, and finally as a principal scientist and the head of the Protozoology group. In 1996, he defended his Doctor of Sciences’ dissertation “Free-living Heterotrophic Flagellates: Ultrastructure, Taxonomy and Biology” at Saint Petersburg State University.

Alexander Mylnikov is best known for his outstanding expertise in morphology and ultrastructure of eukaryotic cells. He primarily focused on small-sized heterotrophs belonging to various groups of protists, including alveolates, cercozoans, apusomonads, amoebozoans, opisthokonts, and excavates. This work unveiled many novelties concerning the structure of cell coverings, microtubular and flagellar apparatus, mitochondria, Golgi apparatus, and extrusive organelles. In recent years, his research was increasingly associated with the study of eukaryovorous flagellates in the context of their molecular phylogeny and early evolution of eukaryotes. He discovered (or re-discovered) new protists, which turned out to be important though previously unknown evolutionary branches on the eukaryotic tree: in particular, two new taxonomic phyla of single-celled predators, the Colponemidia and Acavomonidia. The study of colponemids and the related colpodellids has provided a good potential to understand the early evolutionary events that gave rise to ciliates, apicomplexans, and dinoflagellates – some of the most diversified and widespread groups of protists that are highly relevant to resolving a number of hot issues of medical, socio-economic and environmental importance. Particularly, Alexander Mylnikov’s ability to establish and maintain long-term cultures of colpodellids has played a fundamental role in illuminating the origin and evolution of parasitic
apicomplexans, because the two groups share unique characteristics (e.g., apical complex) associated with infection in the parasites.

The results of Alexander Mylnikov’s investigations were published in more than 200 research articles and books, including those in the leading scientific journals such as Nature, Current Biology, Proceedings of the National Academy of Sciences of the USA, Molecular Biology and Evolution, Proceedings of the Royal Society B, Genome Biology and Evolution, and others. He headed eight long-term research projects granted by the Russian Foundation for Basic Research and also participated in a number of other projects funded by the Russian Science Foundation, INTAS (EU), and GLOBO (Switzerland).

Alexander Mylnikov compiled and maintained the world’s largest collection of living cultures of heterotrophic flagellates with more than 130 species and strains. Working with this collection, he described 4 new taxonomic phyla of protists – Multiflagellata, Colponemidia, Acavomonidia, and Rhodelphidia, as well as the class Gymnophrea and several orders and families of flagellates and amoeboid protists, including Apusomonadida, Cercomonadida, Spiromonadida, Tulamoebidae, Moramonadidae, Krakenidae. He also described about 50 new species and about 10 genera of flagellates, and amoeboid protists, including Apusomonadida, Cercomonadida, Spiromonadida, Tulamoebidae, Moramonadidae, Krakenidae. He also described about 50 new species and about 10 genera of flagellates, and 3 species of centrohelid heliozoans. One genus and several new species were named in his honor by other authors: the choanoflagellate Mylnosiga (Carr et al., 2017), the heliozoan Acanthocystis mylnikovi (Leonov, 2010), the filose amoeba Limnofila mylnikovi (Bass et al., 2009) and three heterotrophic flagellates, Cafeteria mylnikovii (Cavalier-Smith et Chao 2006), Planomonas mylnikovi (Cavalier-Smith et al., 2008), and Allapsa mylnikovi (Howe et al., 2009).

Alexander Mylnikov had many friends and colleagues around the world. He repeatedly traveled to Germany to study the diversity and morphology of free-living heterotrophic flagellates. He participated in many research field trips; in 1998, for example, he spent three months in an expedition to Svalbard. He also attended international symposia and congresses, including the memorable international protistological meetings in Helsingor (Denmark, 1990), Clermont-Ferrand (France, 1995), and Saint Petersburg (Russia, 2007).

Alexander Mylnikov was a great teacher and mentor. He was very fond of students and young researchers, who were very often approaching him seeking for his advices for practical studies and training. He personally supervised three Ph.D. candidates and acted as a scientific adviser of one doctor of science; however, many more researchers were inspired by him to watch the living world through a microscope lens and stiffen with astonishment.

Alexander Mylnikov was a very passionate person who had many hobbies. He was a fan of photography and birdwatching; he loved hiking, kayaking, skiing, and picking mushrooms. In recent years, he also became interested in painting.

The colleagues of Alexander Petrovich Mylnikov, his students and followers express sincere and deep condolences to his family. He was a loving husband (married in 1975) and father of two children (born 1977 and 1982). With him, we lost a most competent and hardworking specialist and a great person. His death is an irreparable loss for Protistology.

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