
CHRONICLE

Mikhail Vladimirovich Ivanov Turns 75

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Academician Mikhail Ivanov, Editor-in-Chief of the journal, turns 75 on December 6, 2005.

His basic research in microbiology has mostly been focused on the physiology, ecology, and geochemical activities of microorganisms playing key roles in global sulfur and carbon cycles and in formation and degradation of mineral deposits. Ivanov's microbiological investigations are characterized by wide employment of methods and techniques derived from such related sciences as geochemistry, hydrobiology, limnology, and oceanology. The methods he developed to quantitatively estimate the geochemical activities of bacteria, based on the use of radioactive and stable isotopes of sulfur and carbon, are widely used by researchers both in Russia and abroad.

Ivanov's studies on the role of microorganisms in the global sulfur cycle have won him worldwide recognition. The quantitative characteristics of the activity of sulfate-reducing bacteria in different ecosystems and the evidence he obtained on the impact of bacteria on

the formation and degradation of native sulfur are well-known both to microbiologists and geochemists. For more than 15 years, Ivanov headed the interdisciplinary international research program *Human Impact on the Global Biogeochemical Sulfur Cycle*, under SCOPE and UNEP, the results of which were published in five volumes of collected papers.

The second important area of basic research conducted by Ivanov and his team is studies of the microflora in ocean seafloor deposits. The data on the distribution and geochemical activities of methane-producing, sulfate-reducing, cellulose-degrading, and saprophytic bacteria and the experimental evidence obtained in these studies on the impact of these organisms on the isotopic composition of carbon and sulfur compounds led to revision of the models of the carbon and sulfur cycles in the World Ocean. In 1985, these works earned Ivanov the S.N. Winogradsky Prize of the USSR Academy of Sciences, the highest professional award in the field of microbiology.

The third important area of Ivanov's research is concerned with geochemical activities of microorganisms in deposits of oil, coal, and natural gas. Ivanov and his former students developed the concept and laid the foundations of biogeotechnology, a new branch of biotechnology, and came up with fundamentally new methods of using microorganisms in mining and oil production. These methods were tested on an industrial scale in coal mines of the Donetsk and Kuznetsk basins, and in oil fields of Tatarstan and western Siberia. In 1995, Ivanov and fellow coworkers were awarded the Prize of the Russian Government for a series of works that led to the development and wide industrial application of biogeoengineering methods to control the activity of bacteria in oil formations for increased secondary recovery of oil. To date, more than 700 000 tons of oil have been recovered by this technique, which has also been employed on an increasing scale in China over the last four years.

More recently (2001–2005), Ivanov's research interest has been focused on quantitative estimations of the activities of microorganisms in the sulfur and carbon cycles in water bodies. Using the Black Sea as an example, he was the first to estimate the scale of microbial production of hydrogen sulfide in seawater and seafloor sediments and to formulate the balance of methane production and oxidation in the anaerobic marine zone. This result has both important theoretical and applied significance because the buildup of meth-

ane crystalline hydrates in Black Sea sediments is regarded as a potential source of energy.

Ivanov is the author and creator of more than 280 research papers and inventions, including four monographs. Three of his monographs—*Vvedenie v geologicheskuyu mikrobiologiyu* (Introduction to Geological Microbiology) (Nauka, Moscow, 1962); *Rol' mikroorganizmov v genezise samorodnoi sery* (The Role of Microorganisms in the Genesis of Native Sulfur) (Nauka, Moscow, 1964); and *Global'nyi biogeokhimicheskii tsikl sery i vliyaniye na nego deyatelnosti cheloveka* (Human Influence on the Global Biogeochemical Sulfur Cycle) (Nauka, Moscow, 1983)—have been translated and published in Japan, the United States, Great Britain, Israel, and China.

Ivanov has had numerous administrative obligations in the field of science: from 1971 to 1984 he was the Deputy Director of the Institute of Biochemistry and Physiology of Microorganisms, Russian Academy of Sciences (RAS); and from 1984 to 2003, the Director of the Institute of Microbiology, RAS. In 1992–2002 he was the President of the Russian Microbiological Society.

Today, Academician Ivanov is the Deputy Chairman of the Physicochemical Section of the Biology Division

of the RAS and the Editor-in-Chief of *Microbiology*. He is also on the editorial board of *Geomicrobiology*, a member of the program committee of International Symposia on Environmental Biogeochemistry (ISEB), and the Chairman of the Specialized Scientific Council to hear doctoral dissertations at the Winogradsky Institute of Microbiology, RAS.

Academician Ivanov is the founder and an active leader of a prominent research school. Under his guidance, more than 30 candidates and doctors of science have prepared and defended their dissertations. For many years he has been lecturing at the Biological Faculty of the Moscow State University.

Mikhail Ivanov was awarded the orders of *Znak pocheta* (1975), *Oktyabr'skoi revolyutsii* (1981), and *Za zaslugi pered Otechestvom*, fourth degree (2000).

The Editorial Board and readers of *Mikrobiologiya* congratulate Mikhail Vladimirovich Ivanov on his 75th birthday and wish him good health, prosperity, inexhaustible optimism, new scientific breakthroughs, talented students, and a portfolio of many interesting manuscripts in the the journal he edits.

Editorial Board