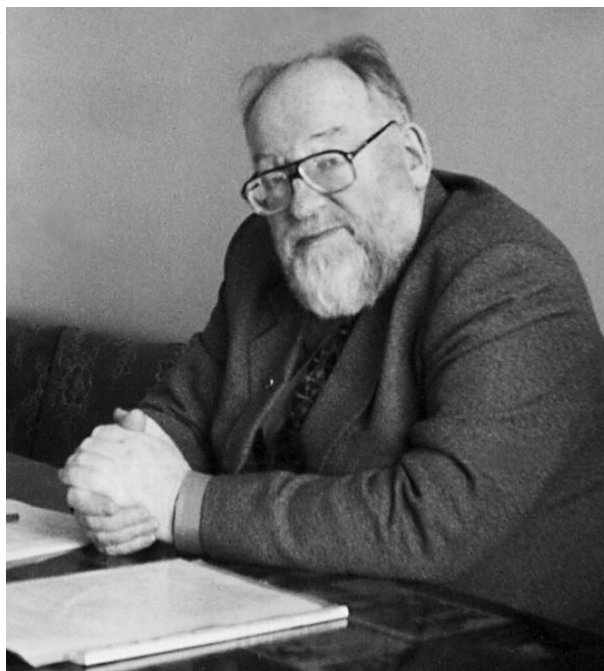


On the 80th Birthday of Igor Stepanovich Kulaev

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In March 2010, we celebrated the 80th birthday of Prof. Igor Stepanovich Kulaev, Doctor of Sciences (Biology), corresponding member of the Russian Academy of Sciences; professor at the Department of Molecular Biology, Biological Faculty, Moscow State University; and chief researcher at the Skryabin Institute of Biochemistry and Physiology of Microorganisms, Russian Academy of Sciences.

Kulaev is a founder and recognized leader of the well-known Russian scientific school of microbial biochemistry and a scientist of great international authority. He and his pupils preserve and develop in their studies the traditions founded by Acads. A.I. Oparin and A.N. Belozersky, which are based on an evolutionary approach to the study of vital functions of a cell and adaptation of organisms to changing environmental conditions.

His ground-breaking works in the field of biochemistry of inorganic polyphosphates resulted in a new understanding of the role of these biologically active polymers in living cells. Studies over many years convincingly demonstrated that these phosphorous compounds were not only the phosphate reserve necessary for microorganisms to survive under unfavorable conditions, but also the regulatory cellular component

participating in the regulation of energy metabolism, in the activity of some key enzymes, and in gene expression; these functions have been preserved over the whole period of evolution, from the most ancient *Archaea* to mammals. Discovery of new enzymes, including 1,3-diphosphoglycerate-polyphosphate-phosphotransferase (EC 2.7.4.17) and dolichyl pyrophosphate-polyphosphate-phosphotransferase (EC 2.7.4.20), improved our understanding of polyphosphate biosynthesis and energy utilization in microbial cells. In 2007, Kulaev was awarded the A.N. Belozersky Prize of the Presidium of the Russian Academy of Sciences for the cycle of works “Biochemical and Molecular Biological Aspects of Metabolism of Inorganic Polyphosphates.” Kulaev’s monographs devoted to the problems of biochemistry, cell biology, and biotechnology of polyphosphates published in Russia and abroad are widely known among specialists and extensively cited in the scientific literature.

The discovery of the multienzyme complex “lysoamidase” with unique bacteriolytic and yeast-lytic activities and the study of its physicochemical properties and mechanism of action made it possible to create a nonantibiotic bactericidal preparation for application in medicine and veterinary science. This work is

protected by ten patents, including a recently obtained patent for application of "lysoamidase" in anthrax treatment and prevention, and has been awarded a number of prizes of the Russian and international exhibitions, including the International Show of Innovations and Investments and the ARCHIMEDES-2002 International Show of Industrial Property.

Works supervised by Kulaev have generated a novel view of such an important microbial organelle as the cell surface. These studies showed for the first time that the molecular ensemble of yeast cell wall comprises proteins possessing simultaneously an enzymatic activity and amyloid properties, which allow them to dynamically ensure cell wall functions depending on the growth phase and medium conditions of the yeast culture.

Kulaev actively participates in the training of specialists in biochemistry, microbiology, and molecular

biology in this country; he has been a supervisor of more than 90 Ph.D. dissertations, with more than 20 of his students taking a D.Sc. degree.

Kulaev conducts great scientific-organizational work, being a member of the Supreme Attestation Committee of the Russian Federation, a number of expert councils, Presidia of the Biochemical and Microbiological Societies, the Pushchino Research Center, academic councils, and the editorial boards of Russian and international journals, as well as being an organizer of Russian and international research conferences.

His colleagues and students appreciate his deep professional knowledge, expertise, and benevolence toward people. They wish Igor Stepanovich good health, many happy returns, and creative progress in his various activities.

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