

On the 70th Birthday of Vladimir Georgievich Debabov



In October 2005, member of the Editorial Board of our journal, Corresponding Member of the Russian Academy of Sciences, Academician of the Russian Academy of Agricultural Sciences Vladimir Georgievich Debabov turned 70.

Debabov is an outstanding scientist, whose contribution to the development of biotechnology and genetic engineering is tremendous, as well as a pioneer in applying this methodology to creating industrial strains of microorganisms.

Debabov commenced his scientific activities at the Laboratory of Protein Chemistry of the Zelinsky Institute of Organic Chemistry (Academy of Sciences of the USSR) in 1958, upon graduation from the Faculty of Chemistry of Moscow State University. In 1963, Debabov defended his Candidate of Sciences dissertation in chemistry, entitled *Synthetic Modeling of Collagen Structure*.

During 1964–1968, Debabov headed a team of researchers at the Radiobiological Department of the Kurchatov Institute of Atomic Energy, where he partic-

ipated actively in developing a technology for fermentation and purification of the forage amino acid *L*-lysine and in launching pilot plants in Moscow and the city of Ungheni (Moldavian SSR), as well as the first plant for production of *L*-lysine in Charentsevan (Armenian SSR). During the same period, Debabov studied histones and the structures of deoxynucleoprotein complexes in eukaryotic nuclei. This research formed the background for his doctoral dissertation in chemistry, entitled *A Study of the Chromosome Deoxynucleoprotein and Model Complexes*, which he defended in 1975.

Since 1974, the Laboratory of the Institute of Genetics and Selection of Industrial Microorganisms (present name: State Research Institute of Genetics, SRIG) began active research aimed at mastering and developing genetic engineering and its practical applications. As a result, recombinant plasmid DNAs were constructed in the USSR for the first time; direct cloning of bacterial chromosome fragments was performed (later, this was named the “shotgun method”); and original methods for optimization of gene expression, including constructs with overlapping codons, transcription ter-

mination, and transcription initiation (“overlappons”) were developed. Debabov’s works on cloning the complete gene of fish proinsulin in *E. coli* cells, isolation of new restriction endonucleases, and development of genetic engineering methodology were awarded the USSR Council of Ministers Prize (in 1981).

In 1977, Debabov became the Director of SRIG and still heads it.

His fundamental molecular-biological, genetic, and genetic-engineering studies allowed Debabov to formulate the principles of modern selection, whose practical implementation resulted in construction of industrial strains of producer microorganisms; many of these strains are still the best in the world. For example, he guided the development of overproducers of *L*-threonine, *L*-homoserine, and other amino acids (for medical purposes and as animal feed). At that time, the producer of *L*-threonine was the first recombinant strain in the world used in large-scale microbiological industry. Moreover, production of *L*-threonine utilizes this strain and its derivatives worldwide (including the United States, France, Japan, and Czech Republic). This work was awarded the USSR State Committee for Science and Technology Prize (in 1980). Debabov guided construction of the world’s first recombinant producer of human interferon $\alpha 2$ and several genetically engineered strains that synthesize various proteins for medical purposes: leukocyte proteins (hIFN- $\alpha 2$, hIFN- αF , and hIFN- $\alpha 11$), fibroblast proteins (hIFN β), human interferons, human interleukins (hIL-1 α , hIL-1 β , hIL-1 α , hIL-2, hIL-3, hIL-4, hIL-6, hIL-8, and hIL-10), etc. The first genetically engineered drug in this country was developed using the producer of interferon $\alpha 2$. This drug under various trade names is still manufactured in Russia and abroad. In 1985, Debabov was awarded the Lenin Prize for this work.

Debabov was elected a Corresponding Member of the USSR Academy of Sciences (in Biotechnology and Genetic Engineering) in 1987, and Academician of the Russian Academy of Agricultural Sciences in 1990.

In 1987, Debabov initiated research into the development of biocatalytic production of acrylamide from acrylonitrile at SRIG (and its Saratov branch). The outcome of this work was the world’s best technology for acrylamide production and organization of a large-scale production facility. The high level of this technology formed the background for attracting Degussa, a large German company, to introduce this process. Degussa invested over 40 million German marks in construction of a state-of-the-art plant in Russia

(Perm). For this work, representing the first step in a biotechnological contribution to the large-scale chemistry in Russia, Debabov was awarded the Russian Government Prize in the Field of Science and Technologies (1996). This technology is covered by patents (of several European countries, the United States, and Australia) and used in a number of plants in Russia and Korea.

Recently, the Debabov’s laboratory has become involved in the development of a technology for producing materials with unique properties from spider-web proteins. So far, recombinant yeasts and plants have been obtained that express analogues of spider-web proteins, and first specimens of threads and films made from these proteins have been produced.

Debabov is the author of 320 scientific publications and 80 patents (of them, 17 are foreign patents). He supervised 25 Candidate of Sciences dissertations and 4 doctoral dissertations.

Debabov is actively involved in scientific organizational, social, and public activities. For many years, he has been the Chairman of the Scientific Council of SRIG, Member of the Council for Conferring Candidate of Sciences and Doctor of Sciences Degrees of the Institute of Molecular Biology, Russian Academy of Sciences; and he has been elected to the boards of the Microbiological Society and the Vavilov Society of Geneticists and Breeders. Debabov is the Editor-in-Chief of the journal *Biotekhnologiya* (Biotechnology); for over 20 years, he has been the Deputy Editor-in-Chief of the journal *Molekulyarnaya biologiya* (Molecular Biology) and a member of the Editorial Board of the journal *Mikrobiologiya* (Microbiology).

Debabov possesses tremendous scientific potential and the ability to unite talented scientists and direct their efforts toward implementing modern and competitive research technologies that meet both general worldwide trends and the actual economic demands of Russia.

Vladimir Georgievich Debabov is an outstanding representative of Russian scientific intellectuals, a brilliant scientist, a connoisseur of literature and art, and an excellent companion. His natural courtesy, delicacy, altruism, culture, extraordinary sense of humor, and inexhaustible optimism attract people and inspire admiration and deep respect.

The members of the Editorial Board of the journal *Mikrobiologiya* wish Vladimir Georgievich many happy returns of this day and success in his manifold activities.

Editorial Board, Mikrobiologiya