



To the memory of Leon Vladimirovich Backinowsky

On September 6, 2011, Professor Leon Vladimirovich Backinowsky, Doctor of Chemical Science, a prominent specialist in the field of bioorganic chemistry, who worked for 50 years in the system of the Academy of Sciences, passed away.

L. V. Backinowsky was born on August 23, 1939, to a family of Moscow engineers. In 1961, he graduated with honor from the Moscow State University and entered the post-graduate courses of the Institute of the Chemistry of Natural Compounds of the USSR Academy of Sciences, at the laboratory of N. K. Kochetkov, who was Corresponding Member of the Academy of Sciences at that time. His subsequent scientific career, which was continued from 1967 at the Laboratory of Carbohydrate Chemistry of the N. D. Zelinsky Institute of Organic Chemistry, was also closely connected with this outstanding scientist.

Having defended the Ph.D Thesis in 1970, dealing with new methods for the synthesis and transformations of higher 3-deoxyaldulosonic acids, important components of natural carbohydrates, L. V. Backinowsky switched to a subject matter new for the Laboratory, namely, structure determination and study of the biological properties of lipopolysaccharides, which are specific glycoconjugates located on the cellular surface of many pathogenic bacteria. During this period, he determined the complex structures of O-antigenic polysaccharides of shigelles, bacillary dysentery germs; discovered and identified in one of them a new acidic monosaccharide, rhamnase-and-lactic acid ether, which he called rhamnol-actylic acid.

Only once again, turned L. V. Backinowsky to the structural analysis of polysaccharides, when he worked as invited scientist in Brazil in 1994–1995, while in the second half of the 1970s he returned to the synthetic chemistry of carbohydrates. At the suggestion of Academician N. K. Kochetkov, he stood at the head of one of most important and successful projects of the laboratory aimed at the preparation of complex oligosaccharides and polysaccharides for elucidating their structure–biological activity relationships. The research group that he headed further developed the existing methods and elaborated new methods for the stereospecific glycoside synthesis, which allowed them to obtain a broad range of oligosaccharide fragments of bioglycans. This work culminated in the first chemical synthesis of heteropolyaccharides with the structure of antigens of bacteria such as pneumococcus, salmonella, and shigella.

In 1987, Leon Vladimirovich defended the doctoral thesis devoted to the synthesis of oligo- and polysaccharides using 1,2-thioorthoesters and 1,2-*O*-(1-cyano)ethylidene derivatives of sugars. For all the subsequent years, his interest in the glycoside synthesis persisted: together with his group, he studied glycosylation kinetics and elucidated glycosylation

mechanisms; they also revealed the regularities of the influence of various factors on the reaction efficiency and stereoselectivity, developed new approaches to the synthesis of oligosaccharides, including highly branched mannooligosaccharides and mannodendrimers, analogs of the carbohydrate chains of glycoproteins, and synthesized new linear and cyclic polysaccharides.

The scientific achievements of L. V. Backinowsky were published in 160 papers and reviews, which can serve as standards of clarity, accuracy, and lapidarity of material presentation. His excellent English in combination with his spirits distinguished the reports he presented at international scientific conferences; sometimes he appeared there as a translator.

L. V. Backinowsky supervised the preparation and defense of nine Ph.D. Theses; all his trainees became highly skilled specialists in carbohydrate chemistry. For many years, he was permanent Chairman of the Attestation Commission for Postgraduate Students, which was passed by many young scientists of the Institute.

An important place in the science organization activity of L. V. Backinowsky was occupied by editing in which he was a high-level professional. Suffice is to mention his active role in the publication of the serial bibliographic index *Carbohydrate Chemistry* and his work, till the end of his life, as the Editorial Executive Secretary of the journals *Russian Chemical Bulletin (Izvestiya Akademii Nauk. Seriya Khimicheskaya)* and *Russian Chemical Reviews (Uspekhi khimii)*, including their English-translated versions. L. V. Backinowsky was a member of the Editorial Boards of the journal *Bioorganicheskaya khimiya (Bioorganic Chemistry)* and the international *Journal of Carbohydrate Chemistry*. He was a member of the Academic Board of the Institute of Organic Chemistry, and many people remember his bright and witty appearances in the sessions of the board. When reviewing and discussing these works, he was always able to identify the "selling point" of the work, while objectively evaluating it.

Leon Vladimirovich had unique personal features. He was generous, always ready to help, having encyclopaedic knowledge, hot-tempered, and very broad in his goodwill, being good to everybody who addressed him for an advice.

The memory of this remarkable scientist and man will be kept forever by everybody who knew Leon Vladimirovich.
