

# Oleg B. Ptitsyn

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Oleg Borisovich Ptitsyn — a major figure in the field of protein folding — died suddenly at the age of 69, on the morning of March 22, 1999, in England on the day before his scheduled lecture at the University of Warwick. He was an outstanding scientist and one of the creators of the modern microscopic theory of polymers and of protein physics. In his lifetime, he watched protein science undergo many revolutions and contributed to a great many of them. At the time he died, O.B. (as we all called him) was the head of the Laboratory of Protein Physics at the Institute of Protein Research, Russian Academy of Sciences, and a Fellow at the National Cancer Institute, National Institutes of Health, USA.

Oleg Ptitsyn was born in 1929 in Leningrad (St. Petersburg). After basic schooling, he entered Leningrad University. There he met M.V. Volkenstein, a young but already well-known theorist, and under his supervision Ptitsyn earned his university degree in physics. Thus began the long-standing collaboration between Ptitsyn and Volkenstein; their joint publications appeared over the course of ~40 years.

After earning his Ph.D. at the age of 25, Ptitsyn joined the Institute of High Molecular Compounds of the Academy of Sciences of the USSR and became a focal point around which students gathered. In his laboratory, he developed the rotational isomeric theory of polymers and the theory of glassy transitions. Together with T.M. Birshtein, he published a fundamental monograph entitled *Conformations of macromolecules* which summarized the rotational-isomeric theory of polymers. This book appeared in Russian and then in English. His activities made him a prominent figure in Russian science, and

he lectured at many universities in the Soviet Union.

He was awarded a D.Sc. degree in physics at the age of 34 and at this point his life changed sharply. He became interested in biology and left the field of chemical physics for molecular biology, turning from synthetic polymers to biomolecules. He was one of the founders of the Winter School on Molecular Biology, a school that helped to educate several generations

began to create his course of lectures on protein physics.

In the 1970s, Ptitsyn and his collaborators developed theories about protein structure and began extensive experimental work on protein folding and the physics of proteins and model synthetic polypeptides. His work on the 'molten globule' state of proteins, in particular, held a special place in his life. At first these molten globule intermediates were proposed in theory by Ptitsyn, in an attempt to understand how a protein rapidly finds its unique native structure among the astronomically large number of possibilities. Later, in the early 1980s, molten globules were identified experimentally by numerous scientists around the world, including Ptitsyn and his colleagues, and by the end of the 1980s a discussion of molten globules became standard in textbooks describing protein folding.

Ptitsyn contributed to science around the world. He worked at the Institute of Protein Research and the National Institutes of Health in the USA, and focused on many topics other than protein

folding, including protein engineering. He was a member of the European Academy and the New York Academy of Science, a member of several Russian and International Scientific Councils, and editor of many Russian and international journals. He was the author of more than 260 scientific publications, wrote one book and was preparing a second one when he died. On July 18, 1999 Oleg would have celebrated his 70<sup>th</sup> birthday.

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1929–1999

of Russian molecular biologists. Together with the biochemist A.S. Spirin and several other scientists, Ptitsyn (at the age of 37, he was the oldest of this company) founded the Institute of Protein Research of the Academy of Sciences of the USSR, now one of the best Russian scientific institutions, and moved from the northern capital Leningrad to the small academic city of Pushchino on the Oka river, 70 miles from Moscow. In this institute he headed the Laboratory of Protein Physics and became a scientific deputy director. At the same time he became a Full Professor of the Moscow Physical Technical Institute and