
EDITORIAL

Alexander S. Spirin



The next two issues of *Biochemistry (Moscow)* are dedicated to the 90th anniversary of the famous biologist of our time, Alexander Sergeevich Spirin (September 4, 1931 – December 30, 2020). A. S. Spirin is rightly considered to be one of the founders of molecular biology. In 1950-60s, when this science has just established, as a very young researcher, A. S. Spirin along with scientists from other countries, demonstrated that ribonucleic acids (RNAs) deserved no less attention than the “en vogue” DNA. In 1958, together with his teacher A. N. Belozersky, he predicted the existence of informational RNAs. In 1960, he formulated the basic principles of RNA tertiary structure organization. In 1963, Spirin and his colleagues demonstrated a principle possibility of ribosome self-assembly from RNA and proteins. The same year, in the experiments on the ribosome reversible unfolding, they established that the ribosome is, first of all, its RNA. In 1964, informosomes were discovered, and in 1968, a hypothesis, that was later solidly proven to be true, was formulated that the relocation of ribosomal subunits relative to each other represents a key event in protein translation. These scientific achievements of A. S. Spirin and his laboratory, as well as the discovery of the non-enzymatic (factorless) translation, the studies of ribosomal structure by electron microscopy and tritium bombardment, the development of a method of RNA cloning, the

discovery of RNA recombination, the creation of a cell-free flow system for preparative protein synthesis, the pioneering works on ribosome crystallization at his Institute; and finally, his latest interests – the development of the prebiotic RNA World hypothesis and establishment of ribosomes as molecular machines – have confirmed Spirin as a leader of modern molecular biology.

The majority of articles and reviews in the Issues 8 and 9 of *Biochemistry (Moscow)* are devoted to current problems in the studies of structure and functions of RNAs and RNA complexes with proteins, primarily, ribosomes. In these works, the colleagues of A. S. Spirin, Professor T. Pederson, Nobel Prize winners V. Ramakrishnan and J. Frank, and representatives of the international Spirin’s scientific school (scientists from the Institute of Protein Research, created by Spirin, former members of his laboratory, his followers, or just his students that have attended his famous lectures and studied his textbooks) discuss the latest achievements in molecular biology and biochemistry and demonstrate that the ideas and achievements of Alexander Sergeevich still grow our understanding of RNA and mechanisms of protein synthesis.

The Editorial Board of *Biochemistry (Moscow)* expresses its gratitude to all authors of the articles and reviews, who have responded with enthusiasm to the invitation to contribute to these journal issues.

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