

Biophysicist in Profile



Nikolai Soldatov

At the recent Discussions meeting, which he organized, Nikolai Soldatov was congratulated for his efforts in organizing the event, but more importantly for his substantive contributions throughout the meeting. There was no session in which he did not raise important and thought-provoking questions. It is that effort and creative thought that is at the root of Soldatov's successful scientific career.

Born, raised, and educated in Russia, Soldatov is now an investigator at the National Institute on Aging (NIA), part of the National Institutes of Health (NIH) in Baltimore, Maryland. Here, he has developed some of the most sophisticated technologies in his field, a far cry from what he had as a doctoral student in Russia. There, he had to rely on his mind and his passion for chemistry to conduct creative research.

"It was not easy to carry on research in the absence of mechanisms like those developed in the West to support young scientists," explains Soldatov. "It was very

difficult to start a big project on my own, and even more difficult to pursue it for many years, but it shaped my character and presented me probably with the best years of my life." Challenges like these propelled Soldatov to "create himself."

The bioorganic chemist earned his PhD in 1981 from the Shemyakin Institute of the USSR Academy of Sciences in Moscow, where he also did postdoctoral work. In 1986, he joined the Institute of Medical Biotechnology, also in Russia. In 1990, he joined the Laboratory of Cell Biology of Howard Hughes Medical Institute at the Rockefeller University, under the direction of Gunter Blobel, currently the John D. Rockefeller, Jr., Professor and Investigator, HHMI Laboratory of Cell Biology.

Soldatov describes this time in his career as the most memorable. Blobel's laboratory was "full of fantas-

complex structures at that time, practically alone." Soldatov explains that the project was a difficult one because "molecular kits were not designed yet, and we relied mostly on self-made molecular tools." Under Blobel, Soldatov learned "dedication and an uncompromised readiness to take the most challenging pass and win."

In 1993, he headed to Switzerland, working as an assistant in the Department of Pharmacology at the University of Bern. Here, he joined the Chair of the Department, Harald Reuter, with whom he collaborated on a project to construct a "representative panel of human calcium channel splice variants and investigated. ... their pharmacological and electrophysiological properties." In 1996, he returned to the States as an assistant professor at Georgetown University Medical Center in Washington, DC. In 1999, he joined the NIA.

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tically gifted researchers." And, although Soldatov's own work was "far away from the mainstream research on protein targeting and nucleopore transport, for which Blobel was awarded the 1999 Nobel Prize," it was here that Soldatov "was able to clone the human calcium channel and its gene, one of the most

Soldatov's resume—and love of science—began at an early age. Born in Chelyabinsk, Russia in 1952 into a family with an atomic power station engineer father and an artist mother, Soldatov was inquisitive about science by the fifth grade. He could be seen "reading serious chemistry books and

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carrying out quite sophisticated experiments” with an equally inquisitive friend. “I remember fascinating experiments on co-crystallization, diffusion through membranes (that we made from fish swim bladder!), and many other exotic experiments,” reminisces Soldatov.

Soldatov is still conducting fascinating experiments today at the NIA. His current research centers on quantitative biology applications to live cells in real time using wavelet transform analysis and FRET microscopy combined with patch clamp. He is also developing a program for new and effective approaches to treat major diseases, such as atherosclerosis, cardiac arrhythmia and heart failure. “It is possible now to isolate cells of interest directly from live tissue and identify what genes among the most relevant cell signaling genes are altered by the disease.” This, said Soldatov, “is the most captivating” work he is doing right now.

In addition to his work in the laboratory, Soldatov is actively traveling around the world with lectures. He has mentored over 30 postdoctoral and post baccalaureate fellows, some of whom have later reached a rank of full Professor. Soldatov is a member of the Editorial Advisory Board for the *Journal of Pharmacology and Experimental Therapeutics*. He also

serves on the advisory board of US National Science Foundation, the UK Wellcome Trust, and the Human Frontier Science Program and on a number of NIH study sections.

This year, Soldatov chaired the Organizing Committee for the Biophysical Society Discussions. The meeting, which ran from October 30

Soldatov has been a member of the Biophysical Society since 1997. He credits the Society as “an outlet for new ideas.” Most important to Soldatov, however, is the Society membership’s professional diversity. “The Society manages to have the best of the best, but at the same time, has its own face,” he explains. And the Annual Meeting is the place for biophysicists to “fill up” on new ideas each year.

Away from the laboratory, Soldatov enjoys hiking and traveling



Nikolai Soldatov and wife, Lyudmila, hiking near the Upper Falls of the Grand Canyon at Yellowstone National Park.

to November 1, celebrated 10 years of research in calmodulin modulation of ion channels. The meeting also honored Professor Harald Reuter’s major contributions to the field, including the discovery of the calcium channel and its modulation by calmodulin.

with his wife, Lyudmila, who also holds a PhD in bioorganic chemistry. The couple, whose son Pavel recently graduated from UNC with a BA in psychology, also share a love of classical music, ballet and opera.