A general classification of forms of the nucleic acid double helix according to families was presented. The physical mechanisms for the gradual change within the B and A families of forms and for interfamily B-A transitions were suggested. (The SCI® indicates that this paper has been cited in over 310 publications.)

The Many-Faced DNA

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One winter day in 1972, I was telling Evgen Malenkov about the results on DNA that had just been obtained by my colleagues Anya K. Schyolkina and Lyuda E. Minchenkova. From analysis of circular dichroism spectra, it looked like an overwinding of DNA helix upon the increase in salt content in solution. Even more interesting was the observation that in the presence of methanol the alkaline ions acted specifically; the best "winder" was Cs⁺, then came Rb⁺, K⁺, and Na⁺. Li⁺ wound the DNA helix less than all the others. Malenkov, a geologist by background, said at once than all the others. Malenkov, a geologist by background, said at once: "This is why we wrote one paper rather than three that time, and it was the right decision. I think this paper has been frequently cited because it proved to be useful for scientists working in various fields of DNA physico-chemistry.

What is more surprising to me is that our Biopolymers paper from 1973 is still frequently cited, in spite of the explosive development of DNA physics, a field where publications usually lose their attraction rapidly.

Rereading the paper while preparing my commentary, I noticed in it very many observations, thoughts, and other details that stimulated my further studies, both experimental and theoretical. Thus, computer analysis of conformational possibilities of DNA, which confirmed the existence of the discrete families of forms, was done together with Victor B. Zhurkin and Yury P. Lysov. Now it is a broad field that can be called "conformational mechanics and dynamics of DNA." The discovery of the Z forms has added one more family. Sequence-dependent energetics of the B-Z and B-A cooperative transitions is being studied successfully. I am sure that we are now at the beginning of a new, exciting, cooperative transition—from the conformational mechanics to the conformational biology of DNA.