Theor Appl Genet (1987) 73:932–933

In memory of Dmitri Konstantinovich Belyaev

Soviet science has undergone a great loss. An outstanding Soviet geneticist, Vice-President of the Siberian Department of the Academy of Sciences of the USSR, the Director of the Institute of Cytology and Genetics, Academician Dmitri Konstantinovich Belyaev died on the 14th of November 1985, at the age of 68. The name of D. K. Belyaev is associated with outstanding achievments in the field of genetics, and in the theory of evolution and selection.

D. K. Belyaev was born on July 17, 1917, in the village of Protasovo, in the Kostroma region but from 1925 onwards he lived in Moscow. In his childhood, D. K. Belyaev fell under the influence of his elder brother, Nikolai Belyaev, a well-known Soviet geneticist. It was from him and from his friends, B. L. Astaurov and other famous representatives of Chetverikov's school, that D. K. Belyaev inherited his devotion to science and his great interest in genetics. Throughout his entire life he carried the deepest respect possible for the founders of genetics, many of whom he had been acquainted with personally, and he educated his disciples on their examples.

In 1939, D. K. Belyaev graduated from the Ivanovo College of Agriculture and started his work on the genetics and breeding of fur-bearing animals.

From 1941 to 1945, during World War II, he served as an officer in the Soviet Army, and was twice wounded. After demobilization, D. K. Belyaev resumed his research in the All-Union Laboratory of Fur Breeding in Moscow.

It was just at that time that Belyaev's main scientific interests were determined. D. K. Belyaev regarded his intensive research into the genetics and breeding of fur-bearing animals not only as practically important with respect to animal genetics but also as an adequate model for the studies of fundamental problems of genetics and the theory of evolution. He realized that observations on the initial stages of domestication of fur-bearing animals could provide an insight into the mechanisms intrinsic in domestication-induced changes in general. In the early 50's he formulated a hypothesis: selection for type of defensive behaviour was the most important factor in the domestication process in its early stages. To check this hypothesis, in 1953–54 he started his experiments on the breeding of silver foxes for tameness. This work was developed in the Institute of Cytology and Genetics of the Siberian Department of the Soviet Academy of Sciences in Novosibirsk where D. K. Belyaev had moved to in 1958. This experiment resulted in the conception of destabilizing selection, according to which any selection involving directly or indirectly the neuroendocrine system can rearrange rapidly the ontogenetic control of many characters and functions and thus generate an immense range of variation.

Within the framework of this conception, the problem of the causes of homologous variation occurring in the domestication of animals belonging to different taxons receives its explanation. One of the important mechanisms generating variation seems to be an inherited activation or inactivation of genes. Therefore, the destabilizing selection appears to be an essential factor which considerably accelerates the rate of evolution. In evaluating the role of destabilizing selection in the changes of populations under domestication and natural conditions, D. K. Belyaev came to understand the importance of stress as a factor of evolution. He carried out a series of experimental studies on the effects of stress on hereditary variation. In recognition of his work on the domestication of animals, the Soviet Academy of Sciences awarded D. K. Belyaev the Vavilov prize. Belyaev's work has raised the domestication problem to a qualitatively new level, and it seems that not since Darwin, has anyone made such a considerable contribution to the understanding of the mechanisms and consequences of animal domestication as D. K. Belyaev.

D. K. Belyaev performed many excellent experimental studies in the special genetics of agricultural and laboratory animals. His work on monohybrid heterosis, on overcoming the lethal effects of some mutations, and many others, became widely recognized and have been included in textbooks of genetics in this country and abroad.

D. K. Belyaev always strived for practical applications of his research. For example, his studies on photoperiodism, begun as early as the 50's, led him later to an elaboration of highly effective methods of stimulation of fertility in swine and the acceleration of fur mutations in mink. Nowadays these methods are used in USSR and some other countries.

The breadth of his scientific interests and his philosophical comprehension of scientific ideas were among the most prominent features of D. K. Belyaev's talent. His papers on the nature of man, the relationship between personality and society, the role of science in the progress of mankind, to name a few, were always very up-to-date, full of high humanism, remarkable for their adherence to scientific principles and for their high moral responsibility. It was therefore not without reason that his plenary lecture at the 15th International

Congress of Genetics in New Dehli in 1983 was entitled "Genetics, Society and Personality".

The outstanding abilities of D. K. Belyaev as an organizer were especially demonstrated in the Siberian Department of the Soviet Academy of Sciences where in 1959 he became the head of the Institute of Cytology and Genetics. At a time very difficult for Soviet biology, he succeeded in creating and consolidating a powerful collective which combined harmoniously the best traditions of the Soviet school of genetics with modern scientific approaches. For some years this Institute was the only large and actively working genetics institution in the USSR. For more than 26 years Belyaev directed the Institute of Cytology and Genetics; under his leadership the main trends of research were formed and great successes in fundamental and applied studies achieved. A series of highly productive varieties of agricultural plants, including the first Soviet radiation-induced mutant variety "Novosibirskaya-67" were made, some new methods of elevation of animal productiveness worked out, and some drugs for the treatment of viral diseases were produced in the Institute. D. K. Belyaev also dedicated much effort to creating winter varieties of cereals for Siberia.

Being a Member of the Presidium of the Siberian Department of the Academy for more than 20 years, D. K. Belyaev actively influenced the development of biological research in Siberia. This influence especially increased after his election to Vice-President of the Siberian Department of the Academy, and Chairman of the United Scientific Council for Biological Sciences of the Siberian Department. D. K. Belyaev was one of the closest fellow campaigners of M. A. Lavrentyev in the organization of the Siberian Department of the Soviet Academy of Sciences.

D. K. Belyaev enjoyed a great scientific prestige. For many years he chaired the Scientific Council for Genetics and Breeding of the Academy of Sciences of the USSR; he was a Vice-President of the N. I. Vavilov Society for Genetics and Breeding; a member of editorial boards of several journals in the USSR and abroad, e.g. TAG.

He was awarded foreign membership in a number of the Academies of several countries, and in 1978–1983 became the President of the International Genetics Federation.

D. K. Belyaev always paid a great deal of attention to the education of scientific personnel. From 1961, he was the Head of the Chair of Cytology and Genetics in Novosibirsk University. He cared much for the teaching of biology in schools. Under his editorship and with his active participation a manual was made for teachers, and in 1985 a textbook of General Biology for secondary schools.

D. K. Belyaev combined his scientific and teaching activities with an intense social activity. He was re-elected several times as Deputy of the Novosibirsk Regional Soviet of People's Deputies; he was the Chairman of the District Council of Veterans of the World War II in Novosibirsk.

D. K. Belyaev's immense merits were recognized with two Orders of Lenin, the Order of the October Revolution, the Order of the Red Star, Orders of the Great Patriotic War, the I and II Degrees, and with additional medals.

Anyone who was lucky enough to know D. K. Belyaev personally, to work by his side, will keep forever in their memories the bright image of this remarkable scientist, a real patriot, a man who was always ready to help his neighbour.

V. K. Shumny, Novosibirsk