

## NIKOLAY NIKOLAYEVIC VORONTSOV A LIFE FOR MAMMALIAN BIOLOGY

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On March 3 of this year, Nikolay Vorontsov passed away in Moscow. Certainly many Italian mammalogists appreciated him as a scientist, especially those colleagues who shared his interest in the genetics and evolution of the mammals. However, I had the privilege of being his friend and of knowing those values of great moral stature and humanity that make a scientist a great man. I met Nikolay at the end of the 1960s, those marvellous years full of tumult and hope. Afterwards, I encountered him many times in Moscow, in Rome and wherever there were mammalogy and cytogenetics conferences. Together we organized the Symposium "Genetics and evolution" for the First Mammalogy Congress in Moscow (1974): those were unforgettable days. A deep friendship was born, a community of senti-

ments based on the passion for evolution and mammalian biology.

Nikolay Nikolayevic Vorontsov was born in Moscow on January 1, 1934. He was graduated with honours in Vertebrate Zoology from Moscow University in 1955; from 1955, to 1963 he completed his studies for the Ph.D. in Zoology and Comparative Anatomy in the Zoological Institute of the USSR Academy of Sciences in Leningrad. Even before he received his Ph.D., in 1958, he published an important review, whose title indicates the scientific program that Nikolay would have developed in the following 40 years of intense research – "The significance of the chromosome study for mammalian taxonomy" (Vorontsov, 1965). Two years later, he published "Cricetidae species of Palaeartic in statu nascendi" (Vorontsov, 1960). His pro-



gram was well delineated: a process of chromosomal mutation acts as a primer for the subsequent genetic differentiation of populations and the formation of new species. Today, 40 years later, the proposal seems obvious, but at the beginning of the 1960s it was well ahead of its time. Indeed, those two contributions by Nikolay Vorontsov deserve to be included in the pioneering literature of mammalian cytogenetics.

When appointed Professor and then Head of the Laboratory of Population Genetics of the Presidium of the Siberian Branch of the USSR Academy of Sciences in Novosibirsk (1964), he found himself at the centre of a vast territory extending from the Baltic Sea to the Siberian Far East, from the tundra of the North to the steppes and deserts of Central Asia and to the high peaks of the Pamirs. Of greater importance, this vast territory was populated by an equally vast and varied number of species of mammals. He travelled through this boundless territory during numerous scientific expeditions, and together with a group of students, primarily his wife Elena A. Liapounova, daughter of the great Russian mathematician A. Liapounov, as well as Vitaly Volobujev, E.Ju. Ivanivkaja, S.J. Radjabli, and many others, he began the systematic cytogenetic analysis of the micromammalian fauna of the Soviet Union. In 1969, "The Mammals. Evolution, Karyology, Taxonomy and Fauna" (Vorontsov, 1969) was published by the USSR Academy of Sciences. Although it was in the form of a stencilled brochure, written entirely in Russian, this to me is a valuable book not only because Nikolay gave it to me in the year of its publication, but also because it is still an irreplaceable bibliographical source. Nikolay Vorontsov and his Novosibirsk collaborators, with other Russian biologists (V.N. Orlov of Moscow, E. Anbinder of Vladivostok), described the karyotypes of 87 micromammals. And that was only the beginning! In 1972, he became Professor in the Far Eastern University of Vladivostok and began to collaborate with the American mammalogists,

Robert S. Hoffmann and C.F. Nadler, on the problem of genetic differentiation of trans-Beringian mammal species. That was also the time of his collaboration with me on the book "Cytotaxonomy and Vertebrate Evolution" (Vorontsov, 1973), more than a year in which we worked closely together. It would take too long to mention all the important novelties that brought to the field of evolutionary cytogenetics by Nikolay Vorontsov in more than 30 years of active research (his bibliography exceeds 500 titles!). However, one cannot avoid mentioning the case of the chromosomal polymorphism of *Ellobius talpinus* which, together with Elena Liapounova, he described in numerous publications (Liapounova *et al.*, 1974, 1980). Perhaps one datum can clarify, for those not too experienced in the secrets of cytogenetics, the importance of the studies by Nikolay Vorontsov to the knowledge of the mammalian fauna of his country: after the identification of cryptic species on the basis of cytogenetics, the number of species of Russian mammals increased from 300 to 400. My having spoken so far of the contributions of Nikolay Vorontsov in the field of cytogenetics might lead one to believe that this was his only interest. It was not. Nikolay was fundamentally a Zoologist and a Comparative Anatomist. In one occasion, we enjoyed reminiscing about our common origins as vertebrate anatomists who subsequently passed to cytogenetics. It was Nikolay who observed that only those who had a solid basis in vertebrate zoology and comparative anatomy could use cytogenetics as a reliable tool for the analysis of the microevolutionary processes of that subphylum. The contributions of Vorontsov in the field of comparative anatomy were truly excellent. It is sufficient to cite two books: "Evolution of the Digestive System of Rodents" (Vorontsov, 1967) in 1967 and "Lower Cricetidae of the World Fauna. Morphology and Ecology" (Vorontsov, 1982) in 1982. That of Nikolay Vorontsov was true comparative anatomy. The phase of dissec-

tion and description was long surpassed and, in a logical comparison of degrees of homologies, of “*balancement des organes*”, animal form was discussed in the context of grand principles. Very interesting was his point of view concerning the different levels of homology for organs of the same system and of the unevenness of evolutionary changes in organs and traits of the same systems, which is closely related to the old principle of compensation of function. Nikolay Vorontsov also exhibited his propensity to discuss “grand principles” when he dealt with biological evolution, as in the treatise that he compiled in 1969, together with Timoféeff-Ressovsky and Yablokov (Timoféeff-Ressovsky *et al.*, 1969), and then in his more recent “Evolution of the Organic World” (Vorontsov and Sukhorukova, 1991) published in 1991 together with Sukhorukova.

Timoféeff-Ressovsky was, in effect, the scientific guide of Nikolay Vorontsov. It is correct to make this tribute of recognition to the great Russian geneticist, whose value has long been ignored not only in his own country, but also in Italy; in truth, the origin of the genetics of *Drosophila* in Italy is due to him. However, Nikolay proved to be a grateful pupil in dedicating a splendid book to his teacher – “Nikolay Vladimirovich Timoféeff-Ressovsky: Essays, Reminiscences and Materials” (Vorontsov, 1993).

From 1982, Nikolay Vorontsov was once again in Moscow, as Head of the Cytological Unit of the N.K. Koltsov Institute of Developmental Biology. However, the end of the 1980s was a time of great renewal for Russia. In 1987, I was in Moscow to arrange the participation of the Russian mammalogists in the Vth ITC that I was organising for Rome in 1989. I discussed with Nikolay at length about the turbulent political changes occurring at such a frenetic and urgent rate. It seemed to me, although Nikolay was not explicit in this sense, that he was about to make an important decision. Nikolay Vorontsov was of the clear opinion that, in

times of such great historical importance, the man of culture, the man of science does not have the right to remain estranged from politics, to confine himself within the ivory tower of science. Indeed, in 1989, Nikolay Vorontsov was elected Member of Parliament and was called by Gorbachev to become Minister of the Environment and Nature Protection, a post that he held until 1991. He was subsequently elected to the Duma for the period 1991-1997. During the time in which he was Minister of the Environment, a significant step forward was taken in nature conservation, and the efforts of N. Vorontsov helped to establish the ecological “*glasnost*” in Russia: he was editor of the first National Reports on the condition of the environment in the ex-USSR (Vorontsov, 1990a, b; 1991), in which materials and information, previously considered secret, were published. But that was not all - Nikolay Vorontsov was also a strong and active member of the antinuclear movement at a time when it was dangerous to be so. He was the first (in 1957!) to raise the issue of the biological after-effects of nuclear tests in the mass media of the ex-USSR. Later, during his political career as a Member of the Duma, his actions helped to establish the nuclear testing moratorium in Russia.

Political activity is highly stressful, especially for those accustomed to open spaces, to nights spent on the steppes guarding trap lines. I cannot forget his enthusiasm in narrating his expeditions in the deserts of Uzbekistan or on the plateaux of the Pamirs. The unfortunate consequence of his work for the political progress of his country was a first heart attack, which strongly compromised his motor functions. But his intellectual capacities remained intact. The last two years of his life were devoted to writing the book, almost a spiritual testament, “The Development of the Idea of Evolution in Biology” (Vorontsov, 1999), published in 1999. However, a subsequent worsening of his condition caused his heart to stop beating. Nikolay Vorontsov left a great inheritance,

composed of scientific knowledge and lessons in the moral and political life. I am left with a profound personal sadness, but enormous pride in having been his friend.

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