

Valeria D. Kallnikova (1932–2008)



On April 8, 2008, after a serious illness, Valeria Dmitrievna Kallnikova passed away. She was 75 years old.

Doctor of biological sciences, leading researcher of the Invertebrate Zoology Department, Valeria D. Kallnikova was one of the most prominent Russian protistologists. Until the last days of her life, she supervised protozoological research at the Biological Faculty of the Moscow State University named after M.V. Lomonosov and represented the Moscow scientific community in the All-Russian Society of Protozoologists.

Valeria Kallnikova was born in Moscow, on August 1, 1932, in the family of an engineer. In 1951 she finished school with a gold medal and entered the Biological Faculty of the Moscow State University. There, she joined at once the Department of Invertebrate Zoology and unhesitatingly chose her specialization — zoology of parasitic unicellular organisms. Her supervisor, Professor Sh. D. Moshkovskiy, was a leading scientist in this field. Valeria Kallnikova graduated, with distinction, in 1956. Her student research paper was highly estimated.

These early achievements show what kind of person Valeria Kallnikova was — conscientious, responsible, inquisitive and purposeful. These qualities paved her the way to science, which she served fruitfully all her life. Valeria Kallnikova is the author of several monographs and over a hundred articles.

After graduation, Valeria D. Kallnikova worked for some time at the Institute for Tropical Diseases

under the supervision of Professor Moshkovskiy. However, in 1961, her scientific and pedagogical activity shifted to the Biological Faculty of the Moscow University. Professor G.O. Roskin, head of the Cytology and Histology Department, invited her to join the studies of the effect of the *Trypanosoma (Schizotrypanum) cruzi* metabolites on malignant tumours. This phenomenon, discovered by G.O. Roskin and E.V. Ekzemplarskaya in the early 1930s, had been investigated since 1940s at a special laboratory of the Department. After her student paper and her first scientific publication, “Tumour-tropism of the *Schizotrypanum cruzi* infection” (1960), Valeria Kallnikova was well prepared for working in this field.

From that moment on, her scientific aspirations were firmly associated with the study of *Trypanosoma* and *Leishmania*. While cytological and cytochemical investigations of the protozoa-infected cancer cell were actively proceeding at the Department, Valeria Kallnikova continued the research on the *Trypanosoma cruzi* tumour-tropism. In 1964 she maintained the candidate thesis “Biology and Cytochemistry of *Schizotrypanum cruzi*, Producer of the *cruzin* Anti-cancer Antibiotic”.

However, *Schizotrypanum cruzi* interested Kallnikova not only as a *cruzin* producer. Her scientific curiosity was also attracted by the kinetoplast, the special organelle of the Kinetoplastida. This interest resulted in the monograph “Kinetoplast, the Cell Organelle” (1977) and the doctoral thesis (1983).

The monograph, summing up abundant literature data and the results of Kallnikova’s own research, revealed the ultrastructure of the kinetoplast, its dynamics in the life cycle of tripanosomas and leishmanias and its importance for systematics. Special attention was paid to its biochemistry, its DNA and to the synthesis of proteins by the kinetoplast as a molecular system. The immune specificity the kinetoplast was considered, as well as the reduction of this organelle in different taxa of the Kinetoplastida. As the result, Valeria D. Kallnikova formulated an idea about different evolutionary directions of the protozoa, as integral organisms, and metazoa, as integral systems of cells. She noted that

the increasing diversity and stability in the expanding environment were accompanied in the former by an increasing complexity of the regulative interactions between intracellular organelles and in the latter, by an increasing specialization of the cells making up the organism.

Valeria D. Kallnikova was always interested in the interactions of organelles in the cell-organism of the flagellates. In 2000, she and her student T. Kondratyeva published a paper reporting close contacts, including possible DNA transfer, between the nucleus and the kinetoplast. The kinetoplast DNA minicircles were suggested to be a source of genotypic diversity and transposable genetic elements. Moreover, these contacts were presumed to be involved in the specific mechanism of variability characteristic of the agamic Kinetoplastida.

The last 20 years of Kallnikova's life were connected with the Invertebrate Zoology Department of the Moscow University, where she became the head of the protistological direction. Deeply convinced that biotherapy of the malignant tumours was a highly promising direction, she unfolded large-scale research on cytology, immunology and the mechanisms of anti-cancer activity of the *Trypanosoma cruzi* strains. Combining research with teaching, VD gave lectures in protistology for the students of the Biological Faculty and the Faculty of Fundamental Medicine of the Moscow State University, conducted practical training on protozoa within the

“Larger practicum on invertebrate zoology” and supervised the students' research work, preparing several disciples.

In the last years of her life, V. D. Kallnikova investigated immune properties of the lysates of various *T. cruzi* strains. In 2004 she published her second monograph, “Anti-tumour properties of the flagellated protozoan *Trypanosoma cruzi*”. This monograph deals with the complicated history of the development of this branch of research, summarizes the data on the tumour-tropic properties of various *T. cruzi* strains during different life cycle stages and presents the results of the studies of the immune-cytological anti-cancer effect of the lysate of *T. cruzi* individuals taken during the non-virulent period of the life cycle.

The life of Valeria Dmitrievna Kallnikova, a researcher and a teacher, is an example of an absolute devotion to the once-chosen path in science and to the cause of dissemination of knowledge. Despite the grave illness, she continued intensive research and teaching until her very last days.

With the demise of Valeria D. Kallnikova, the Moscow University lost not only a prominent scientist, but also a true representative of the Russian *intelligentsia*. Valeria Dmitrievna was a very kind, tactful and mild-mannered person. Whatever the circumstances, she always set us an example of what an academic should be.

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