

## Celebrating the Jubilee of Elena Gaginskaya — the founder of the Lampbrushology School in Saint Petersburg University

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### Abstract

Elena Gaginskaya is an outstanding scientist, doctor of biological sciences, professor, international expert, creator of the first core facility at St. Petersburg State University, and the founder of the Lampbrushology Scientific School. She celebrates her 85th birthday this year. Students, colleagues and friends congratulate Elena with all their hearts on her jubilee, and mark their devotion to her with this publication.

**Keywords:** Jubilee, Elena Gaginskaya, lampbrush chromosomes

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**Fig. 1.** Elena Gaginskaya, photographed in 2017 after her fabulous talk in N. Novgorod



**Fig. 2.** The Laboratory of Chromosome Structure and Function in Biological Institute in 1999. A. V. Rodionov, S. E. Deryusheva, N. A. Lukina, D. V. Ossipov, A. F. Saifitdinova, E. R. Gaginskaya

Elena Gaginskaya was born on July 15, 1932, in Gorky (N. Novgorod), in the family of an artist. By the beginning of the World War Second, the family lived in Leningrad. Elena's father was killed at the front, and her mother was left with two children. During the blockade the family was evacuated, and Elena sometimes recalls the queues for bread. They returned to Leningrad only after the war. Life was not easy, but Elena often talks about her father's artist friends who took care of her family, and about her mother, who worked in a public library and did everything to give her children a good education. Creative people continue to surround Elena Gaginskaya.

Another characteristic feature of Elena is her unquenchable curiosity, which, combined with a love of nature, brought her to Leningrad University and for many years determined her fate. Her teacher and scientific advisor in her student years was the outstanding ornithologist Alexei Malchevsky. Elena likes to quote his statement that when working with people "human qualities" are the most important, because you can teach many things, but you cannot teach someone to be a person. Elena's scientific interests developed from faunistics and studies of bird migration to the study of cellular

mechanisms of oogenesis and the structural and functional characteristics of the nucleus, and further to the fundamental problems of the evolution of genomes. Through all these years, she remained faithful to her alma mater, the Biological Institute of Leningrad University, and to Russian science, contributing not only to its development, but also to personnel training.

Forty-five years ago, immediately after the defense of her Ph.D., Elena started to manage the electron microscopy laboratory. It was a supporting unit that provided the operation of the equipment complex, which was used by specialists of different laboratories of the Biological Institute for their research. Elena gradually turned it into a research laboratory where students, postgraduates, and young scientists

worked. Working on histological and ultrathin sections of ovaries, Elena and her students studied the cytological aspects of oogenesis in birds, identified a new class of structures formed in growing oocytes on chromosomes, and described a special intermediate type of oogenesis in birds characterized by the deactivation of ribosomal genes in the oocyte core. In the mid-80s, under the influence of the works of G. Callan, H. Macgregor and J. Gall,



**Fig. 3.** The Laboratory of Chromosome Structure and Function in 2015. A. G. Dyomin, A. F. Saifitdinova, E. R. Gaginskaya, S. A. Galkina, E. I. Koshel, O. B. Lavrova



**Fig. 4.** The Laboratory of Chromosome Structure and Function and “Chromas” Core Facility staff in 2017. A. F. Saifitdinova, A. V. Radaev, A. G. Davidian, E. I. Koshel, E. R. Gaginskaya, S. A. Galkina, V. A. Volodkina, M. M. Kulak

a method for the extraction of lampbrush chromosomes from bird oocytes was first developed in the laboratory.

The development of this methodology opened up new and broad prospects for further research, so specialists from different countries turned to Elena and her staff with requests to conduct fine mapping of the studied sequences on bird chromosomes. Based on the success of lampbrush chromosome research, in 1986 the laboratory was renamed to the Laboratory of Chromosome Structure and Function, which is now widely known throughout the world for its achievements. The Russian school’s research on giant transcriptionally active chromosomes was highly appreciated, and the Russian team headed by Professor Gaginskaya can objectively be considered the current leader in the field of lampbrushology for research in developmental and cell biology, cytogenetics and evolution.

In the last decade of the 20th century, which was a very difficult time for the country, the Laboratory of Chromosome Structure and Function continued making discoveries and publishing works in leading scientific journals. For a long time, the banner of the Russian Foundation for Fundamental Research included, along with a photograph of the radio telescope, an image of immunostained chaffinch lampbrush chromosome made in the laboratory of Elena Gaginskaya. Recognition provided an opportunity to receive grants and invest in the development of the laboratory. In 1997, for the first time at St. Petersburg State University, the Chromas Core Facility was created on the laboratory base. It

helped many employees of the Biological Institute and other university departments, as well as staff of other academic institutions, to carry out high-level research. (In 2003, Chromas Core Facility was included in the network of Core Facilities of the Russian Federation; in 2010, it entered the network of St. Petersburg State University Core Facilities; and in 2014, it became a part of the Science Park of St. Petersburg State University, <http://chromas.spbu.ru/>.) Elena Gaginskaya directed the work of Chromas until 2015.

The leading scientific school, referred to as “The Phenomenon of Lampbrush Chromosomes: a Contribution to Development Biology, Cell Biology and Evolutionary Cytogenetics”, under the guidance of Professor Elena Gaginskaya, has been supported for many years by the program of the President of the Russian Federation, and has given many scientists a start in scientific life. For many years, Gaginskaya’s work has been focused on a comprehensive study of the phenomenon of lampbrush chromosomes and the use of lampbrush chromosomes of birds as a model object for analyzing the fundamental problems of the structure, functioning, regulation and evolution of the eukaryotic genome. Work on the organization and evolution of the nucleolus organizer, published in the last two years, opened a new direction for the development of school research and once again provided great opportunities to students and colleagues of Professor Gaginskaya. Those who have been lucky enough to communicate with Elena have a vivid impression of the charm of her personality. It should be noted

that many people in Russia and abroad know and appreciate her, both inside and outside the realm of professional interaction.

For illustrative material, photos are taken from the archives of A.G. Davidyan, M.R. Kuleshin and A.F. Saifitdinova.

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