

**CELEBRATING 80<sup>TH</sup> ANNIVERSARY OF PROFESSOR  
SERGEY GOSTIMSKY**

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✿ The paper is dedicated to the 80<sup>th</sup> anniversary of Professor Sergey Gostimsky (Genetics Department, Faculty of Biology, M.V. Lomonosov Moscow State University). Professor Gostimsky's contribution to science and higher education is referenced.

✿ **Keywords:** history; portraits; professor Gostimsky.

**К 80-ЛЕТИЮ СО ДНЯ РОЖДЕНИЯ ПРОФЕССОРА  
СЕРГЕЯ АЛЕКСАНДРОВИЧА ГОСТИМСКОГО**

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✿ Статья посвящена памяти Сергея Александровича Гостимского, профессора кафедры генетики биологического факультета МГУ. Рассмотрен его путь как ученика, ученого, учителя.

✿ **Ключевые слова:** история; портреты; профессор Гостимский.

In 2019 we celebrated the 80<sup>th</sup> anniversary of Sergey Aleksandrovich Gostimsky (21.05.1939–06.11.2012), doctor of biology, and professor at the M.V. Lomonosov Moscow State University (MSU).

The researcher will always be remembered for his extensive and engaging lectures and seminars, his interesting topics of publications, the way he made speeches at the department meetings, and how firm he stood for his students and postgraduates. More and more people came to the university and to study science, even though they had never met Sergey Aleksandrovich (herein referred to as S.A.). Moreover, it seems more important to depict as many personal characteristics of the deceased as possible, in order to capture everything about him. As science progresses, the contribution from S.A. remains as rich as ever; his findings are still as relevant and impactful to this day.

*The goal of this short note* is to describe the way S.A. Gostimsky was as a scientist and as a person.

**School of sciences**

Scientists, especially employees at the university, always more or less adhere to the set tradition. S.A. graduated from the faculty of Biology and Soil Science at MSU in 1962. He considered Vera Veniaminovna Khvostova, a reputable scientist in the field of cytogenetics, as his teacher and first supervisor. Her photo was placed in the bookshelf next to the desk of S.A. A lot was written about Vera Veniaminovna [1], a person from the heroic epoch, so there is no need to repeat her biography. However, it should be noted that when S.A. graduated from university, it was the time of the Russian genetics revolution. The major period of S.A.'s creative activity was a relatively favorable period for science.

On the contrary, V.V. Khvostova was directly involved in all sadly remembered events; she was deprived of the opportunity to be engaged in research for years. She was an employee of V.F. Natali, N.K. Koltsov, N.P. Dubinin and other outstanding biologists of the first half of the 21<sup>st</sup> century, and



Sergey Aleksandrovich Gostimsky (photo by F.A. Konovalov)

became the living carrier of traditions of the Moscow school of genetics.

If the scientific interests of S.A. are presented in the set of keywords, the two of them, *mutagenesis* and *chromosomes*, appeared in his first works performed under the guidance of V.V. Khvostova and correlated with the topics of her investigations [2, 3]. That was the time when the main object was chosen, a garden pea (*Pisum sativum*), from which genetics started a hundred years ago in the experiments of Gregor Mendel. A portrait of Mendel was placed next to the photo of V.V. Khvostova. Though S.A. happened to work with other objects, such as *Drosophila*, [4], he remained loyal to a garden pea throughout his life.

The impressive personality of Aleksandra Alekseevna Prokofyeva-Belgovskaya (1903–1984) had a significant impact on S.A. Her photo was also in his study room. S.A. told that Aleksandra Alekseevna always asked him if he spread sand on the walkways between the beds with peas: she believed that the pea plot should have a Mendel-like, monastic order. A.A. Prokofyeva-Belgovskaya and V.V. Khvostova had mutual areas of research, including the process of mutagenesis, space, and radiation karyology.

One more photo in the room of S.A. was the portrait of Vladimir Vladimirovich Sakharov

(1902–1969). S.A. told about him with great respect, knew his works, and participated in the Sakharov memorial readings conducted at the Institute of Developmental Biology.

S.A. developed as a scientist with those who are currently called the classicists of Russian genetics. He humorously told how his toast at a banquet was critically commented by Nikolay Vladimirovich Timofeev-Resovsky (1900–1981). The early to mid-1960s was the time of official restoration in genetics, and S.A. became a member of that process together with many other scientists and lecturers. The rapid development of space investigations and the effect of space flights on the living organisms were conducted in parallel. Interestingly, S.A.'s first article was published in the first issue of the new journal "Space Investigations" [2]; the first work that was written by him as a single author was published in the second volume of the recently established journal "Genetics" [5].

### Researcher

The range of scientific areas that S.A. was engaged in throughout his life became apparent soon after he graduated as a student.

First was in the field of chromosomes – karyotypes, chromosomal rearrangements as the indicator of the force of mutagenic effect, instability of genomes, and cytogenetic mapping.

Numerous mutants with morphological disturbances were obtained during experiments of induced mutagenesis in a pea, which are still interesting when investigating the regularities of genetic regulation of morphogenesis. However, photosynthetic mutants were the most frequently induced. They became the main focus of S.A. They formed the basis of genetic collection [6], which we will shortly elude too. These studies resulted in his Ph.D. thesis (1966) and doctoral dissertation (1981).

According to the topics of S.A.'s articles, he was a fixture not only for genetic scientists but also for experts in plant physiology. The major publications, where S.A. was the author and co-author, were devoted to the features of photosynthesis, the ultrastructure of chloroplasts, and secondary metabolites of different mutants of the pea. S.A. kindly provided the material of genetic collections to his

colleagues from the department of biophysics at MSU and the Institute of plant physiology. These studies, in combination with genetic analysis and cytogenetic characteristics of mutants, became the basis of his doctoral thesis entitled “Genetic control of photosynthesis in the higher plants”.

The group involved in the pea mutants study headed by S.A. formed at the department of the genetics at MSU. Besides cytogenetic and physiological areas, another topic of interest was somaclonal variability. At the end of the 1990s, the range of tools of the group had expanded and included molecular genetic methods of investigation. They amended the work of mapping of the new genes of the pea chromosomes, as well as provided a more accurate examination of changes in the genome during *in vitro* cultivation. One of the last areas S.A. was actively involved in was an examination of the effect of the factors of space flight on the pea genome using cytogenetic methods and DNA markers [7]. The circle has been closed: studies of S.A. started from space and ended with space. However, even working on his last project, S.A. has been sincerely marveling, ‘How quaint! Hard to believe! These very peas were in space!’

Many of S.A.’s publications were devoted to ecological genetics exploring the effect of the environmental factors on the genetic apparatus. The space flight factors effect was assessed on different levels. It appeared that there are no significant differences between the “space” and the “earth” plants in phenotype and frequency of chromosome mutations [7]. A separate area was obtaining plants resistant to herbicides [9]. Based on the material of the original semi-dominant chlorophyll-deficient mutants of a pea, the test system was proposed for the assessment of the mutagenic effect of external factors [10]. Clearly detectable spots of more intense color appeared on the leaves of the mutant pale-green plants as a result of somatic mutations. This was the analog of the spot-test that was earlier proposed for soybean mutants [8].

It is not a secret that not all data obtained by experimental science remain relevant. Chromosome mapping was significantly superseded by the modern methods of genome analysis. Physiological achievements are being specified as the scientific tools are improved. However, if we talk about the

results of S.A.’s work, his apparent contribution to the future is the genetic collection of the common pea. It includes dozens of Russian and foreign varieties, unique mutants, and numerous hybrids. More detailed information about the collection and studies performed with its material is provided in a previous article [6].

S.A. had excellent knowledge regarding the material of collection and the pea in general. In the last years of his life, he had some health problems, and his vision critically declined. However, S.A. continued visiting the biological station of MSU in Zvenigorod; he determined phenotypes of hybrids... by touch. He knew for sure what parental lines should be selected for crossbreeding in order to map any area of the chromosome. Some colleagues said that they knew S.A. not personally but thanks to his collection. This fund continues growing and serves for both research and educational objectives.

#### Lecturer

Having graduated from the department of genetics at MSU, S.A. engaged his life with the department. He was giving lectures in genetics, “classical” part of the course, for students of the entire faculty of biology and not only for them but also for biophysicians from the faculty of physics. For many years, S.A. was conducting the departmental course on cytogenetics. A summer intern in genetic analysis of plants was an extraordinary event that was running every year at the Zvenigorod biostation. The critical task of the intern was an analysis of two lines of pea and hybrids of the first and second generations of their crossbreeding. Besides seven classical Mendelian features, the students could observe numerous new mutations, including the ones that were not studied in detail. Almost every summer, they managed to make a small invention.

Intern completion would occur by July 20<sup>th</sup>, the birth date of Mendel, and was celebrated with a small festival and mandatory eating of pea soup. The past tense in the story about the “pea” field workshop is not suitable: it still exists, and traditions are being continued.

Employees of the department recalled with enthusiasm the large practical course on cytogenetics arranged and conducted by S.A. for many years. This course was very intense and included work with

different objects and almost all cytogenetic methods available at the time “before PCR”, including differential staining and preparation of permanent slides.

As a lecturer, S.A. combined classical features of professor of the old school, such as high standard academician appearance, intellect, flawless speech style, with a sense of humor, sometimes with tricks. The former students of S.A., who later became honored employees of the department, recalled that he disciplined them during their practical work closing door from the outside with a mop. To S.A.’s satisfaction, he once managed himself to implement the old joke where the lecturer asked a student about the name of the lecturer and did not get any answer.

Besides lectures and seminars, S.A. was the academic advisor for numerous works of students and postgraduates. Many biologists from China, India, Iran, and some other countries were among his postgraduate students. It is probably hard to say that the students of S.A. form the corporate school; however, the knowledge obtained by them at MSU has been spread literally all around the world. Many of S.A.’s postgraduate students continue the research activity; some of them have risen to excellence in the profession.

S.A. was involved in the life sciences and education as a reviewer and opponent of the great number of course papers, diploma works, and theses. He was a member of the dissertation council in genetics at the Moscow Institute of general genetics. Achievements of S.A. were distinguished at the official level: he was the winner of award n. a. D.A. Sabinin, he was given the honorary titles “Professor emeritus of MSU” and “Veteran of labor”, as well as awarded medals at the 100<sup>th</sup> anniversary of N.I. Vavilov and 250<sup>th</sup> anniversary of MSU.

Memories about a person are a sensitive matter; they disappear together with those who personally knew the individual. However, the researcher’s work and contribution to the future have chances to retain. One may expect a longer life for the articles that will be quoted, the collected material that will be used by people who did not know ever heard about the author and collector. It is hoped that Sergey Aleksandrovich Gostimsky, professor at MSU and expert in plant genetics, had managed to make the contribution like this.

That is possibly the main thing.

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