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**SERHIY ANDRIYOVYCH SMORSHCHOK
 (TO THE 90TH ANNIVERSARY SINCE BIRTHDAY)**

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The article is devoted to the life, scientific and pedagogical activity of Professor Serhiy Andriyovych Smorshchok – famous histologist, laureate of the State Prize of the USSR (1982), head of the Department of Histology and Embryology (1977–1995) of Ternopil State Medical Institute, organizer and longtime head of the electron microscopy laboratory, Academician of Ukrainian Ecological Academy of Sciences (1993). The article highlights biographical data, analyzes the scientific achievements of the scientist, his contribution to the development of modern histology, combusting, medical education. S.A. Smorshchok made the major impact to the study of the pathogenesis of burns, compensatory–adaptive processes in tissues and organs at severe thermal burns and the search for ways to correct destructive changes. Serhiy Andriyovych's professional scientific, pedagogical and organizational activities, personal qualities contributed to the development of the Ukrainian histological school, its worthy representation at the international level.

Key words: histology, electron microscopy, burn disease, compensatory–adaptive processes, antioxidants, enterosorbents, xenografts.

The Ukrainian school of morphologists has many creative and talented individuals, whose scientific activity plays a significant contribution to the development of modern cytology, histology and pathomorphology. Professor, laureate of the State Prize of the Ukrainian SSR, Academician Serhiy Andriyovych Smorshchok (1931–1995) would have passed 90 years in April 2021.



Serhiy Andriyovych
Smorshchok

The Scientific heritage of Professor Serhiy Smorshchok includes a series of works dedicated to the study of the structural basis of the burns pathogenesis; the development of compensatory and adaptive processes, the search for means of correction of dystrophic and destructive changes in tissues and organs in severe thermal burns with biologically active substances of membrane action. A significant amount of research is devoted to the analysis of the patterns of development of destructive and intracellular regenerative processes in severe burns in the anterior part of the adenohipophysis, adrenal glands, thyroid gland [12, 13]. The results of research by Serhiy Smorshchok have been recognized both at home and far abroad.

Serhiy Smorshchok was born on April 17, 1931 in the village of Hrytsky, Volkovysk district, Grodno region, Belarus, in a family of peasant. After father's death in 1946, Sergiy along with his mother and brother migrated to their relatives in Lviv, Ukraine. In April 1951, he was drafted into the army. He served on the island of Sakhalin, after demobilization he returned to Lviv and became a student of the Lviv Veterinary Institute, where he graduated with honors in 1960. From 1961 to 1963, he worked as a researcher at the Institute of Agriculture and Animal Husbandry of the Western Regions of Ukraine.

Not wanting to stop there, in March 1963 S. Smorshchok entered post–graduate school at the Department of Histology of the Lviv Zooveterinary Institute. The direction of the research of the young scientist was innervation and histochemical characteristic of the nerve plexuses of the gastrointestinal tract of animals. Under the guidance of Professor O.M. Vynogradova, he completed and successfully defended his dissertation “Morphological and histochemical studies of the intramural nervous system of the digestive tract of pigs” [11]. In the conclusions of the dissertation the author, in particular, points to the identified

well-developed vascularization of the ganglia as a confirmation of the important role of the relationship between neurons and blood capillaries in the complex function of the digestive tract. The author singly made 117 microphotographs used to illustrate the scientific work. In May 1966, Serhiy Smorshchok was awarded the degree of Candidate of Biological Sciences. After the defense of the candidate's dissertation S.A. Smorshchok continued to work as a senior researcher in the Department of Small Animal Husbandry of Research Institute of Western Regions of Ukraine.

Significant changes in the life of the young specialist began in 1967, when Serhiy Smorshchok was enrolled as an assistant of the Department of Histology and Embryology of the Ternopil Medical Institute. Already in the early 70's, Sergei Andriyovych created a laboratory of electron microscopy. Responsibility, persistence, self-criticism, deep professional knowledge allowed to achieve a high level of quality of work in the new laboratory. Due to this, employees of various departments of the Ternopil Medical Institute, as well as many higher educational institutions of other cities of the country received thorough and scrupulous assistance in performing electron microscopic, histochemical, morphometric, light-optical research [9, 10].

Evidence of persistent work is the fact that in a relatively short time S. Smorshchok provided methodological and practical assistance in performing morphological sections of more than 20 doctoral and 30 candidate dissertations [9]. As mentioned by colleagues, the high scientific and methodological level and quality of work which performed in the laboratory of electron microscopy and the professionalism of its employees contributed to the fact that among scientists formed an opinion: if electron microscopic studies performed in the laboratory of Professor S.A. Smorshchok, the reliability of their results cannot be doubted [3]. In 1977, he headed the department and was the permanent head until his sudden death in 1995.

Intensive and productive scientific work of Serhiy Andriyovych and the team headed by him to study the pathogenesis of burns aroused considerable interest not only in Ukraine and in the republics of the Soviet Union, but also among foreign colleagues. Evidence of this are numerous letters with proposals for scientific cooperation from the United States, France, Germany, Italy, Switzerland, Spain, Argentina, Venezuela, Bulgaria, Japan, Czecho-Slovakia [9]. The results of scientific research are covered by Serhiy Andriyovych in numerous scientific publications.

In 1982, Serhiy Andriyovych Smorshchok was awarded the State Prize of Ukraine in Science and Technology for his participation in the series of works "Development of the Pathogenesis of Burn Trauma, Diagnosis, Treatment, System of Care and Rehabilitation of Injured Burns in the Ukrainian SSR" [17]. Professor Serhiy Smorshchok became the first in the institute to be awarded the State Prize for significant scientific achievements [10].

Successful defense of his doctoral dissertation on the topic "Structural basis of destructive and regenerative processes in the adenohipophysis, adrenal cortex and thyroid gland in burn injury and the use of antioxidants" took place in 1984 at the 2nd Moscow "Order of Lenin" State Medical Institute named after N.I. Pirogov and became the logical result of many years of comprehensive researches [13].

In the same year, for long-term conscientious work, Serhiy Andriyovych was awarded by the medal "Veteran of Labor" on behalf of the Supreme Soviet of the USSR.

S.A. Smorshchok was awarded by the degree of Doctor of Science in 1985 and the academic title of Professor of Histology in 1986. He was a scientific consultant to 4 doctoral students, supervised the implementation of 11 PhD theses, all of them were successfully defended. Serhiy Andriyovych, as a research supervisor, has always been distinguished by high responsibility, sincerity and care in relation to his students.

Evidence of recognition of the high level of research under the leadership of S. Smorshchok is a collaboration with the leading institutes of the former USSR. In particular, since 1987 he has been leading research work: "Study of the structural basis of the pathogenesis of burn disease". Co-executors of this topic were employees of the Institute of Surgery named after O. Vyshnevsky of Academy of Sciences of the USSR and the Research Institute of Physical Chemistry of Academy of Sciences of the USSR, Moscow [9]. Long and productive scientific cooperation also connected Serhiy Andriyovych with histologists of the Bogomolets National Medical University, Kyiv. His closest colleague and friend was a well-known Ukrainian histologist, Professor Andriy Kolomytsev. Here is how he recalls S. Smorshchok: "Communicating with Serhiy Andriyovych, I realized that he is a very friendly person, with a huge inner culture. I have never heard sharp humiliating criticism from him. He expressed his disagreement with someone in the form of a delicate expression of an intelligent polemicist. When he told me about what preceded his arrival in histology, I was amazed at the strength of will and determination of this man" [7].

Friendly and scientific interests connected Serhiy Andriyovych with the head of the Department of Histology and Embryology, Professor K.S. Kabak, G.K. Burov and Professor V.P. Yatsenko, who for a long time was the director of the Research Laboratory Center, which included the electron microscopy laboratory (Bogomolets National Medical University, Kyiv). Serhiy Andriyovych together with his students repeatedly took part in the scientific seminars of the center with the discussion of electron microscopic and morphometric studies, which were conducted both in the center and at the Department of Histology. He was an opponent of the candidate's dissertation of the student of professor V. Yatsenko – the senior researcher T.P. Kuftyreva and doctoral dissertation of L.O. Stechenko which performed under the supervision of Professor K.S. Kabak.

Serhiy Andriyovych supervised research of scientific research economic contractual topics (during 1986–1988 and 1990–1992), which devoted to toxicological research of 8 chemicals and scientific substantiation of maximum permissible concentration of certain chemicals in sanitary water bodies [8]. In 1993, Serhiy Andriyovych was elected as a member of the Ukrainian Ecological Academy of Sciences for his active research into a number of issues in the field of nature protection.

Serhiy Andriyovych constantly took care of the high scientific and educational–methodical level of the department's work. Comfortable working conditions for students were created in department: cozy classrooms, proper provision of microscopic equipment, quality light–optical micropreparations and electronic microphotographs, tables, projectors and slides. Modern, informative stands of the department were illustrated with high–quality large–format electronic microphotographs dedicated to the relevant topic. In his memoirs, the former rector of the Ternopil Medical Institute, professor, corresponding member of the Academy of Medical Sciences of Ukraine I.S. Smiyan notes that the Department of Histology had the reputation of in–depth scientific research and was a model for other departments of this profile [10].

Serhiy Andriyovych Smorshchok was significantly distinguished by his human qualities: he was a very kind man, a wonderful, caring family man and father. Hard work and perseverance were combined in him with humanity, he treated his pupils, students and colleagues sincerely and with understanding. He had an innate skills of a lecturer, was an excellent teacher, was able to highlight the most important and in simple words to explain difficult to understand material.

Not limited to fundamental experimental research, Serhiy Andriyovych actively worked on the implementation of their results in medical practice. Due to many years of research on the pathogenesis of burn disease, a scientific justification for the use of antioxidants in the complex treatment of burn patients has been formed [15, 16]. His name is among those who have made a significant contribution to the development of combustiology, in particular, modern technologies for the treatment of deep burns and the search for biological substitutes for the skin [6].

Experimental works of S. Smorshchok with the use of light and electron microscopy both with histochemical research methods have become an important justification for the introduction of hemosorption, application and enteral sorption in the treatment of burn patients, in particular, the use of West sorbents and enterogel [1, 14, 18]. Serhiy Andriyovych's researches into the viability of cryopreserved auto– and xenografts of the skin are of great importance. This contributed to the creation of banks of lyophilized and cryopreserved skin and their clinical application. This was the result of effective scientific cooperation with the surgeon–combustionologist, laureate of the State Prize of Ukraine, Professor V.V. Bihunyak, who actively worked on improving the treatment of burn patients. In the future, Professor V. Bihunyak developed new methods of treating wounds using lyophilized xenogeneic pig skin, which is actively used in all burn centers of the country [5]

Professor K.S. Volkov, who was S. A. Smorshchok's first student, recalled to him: “We, his students, were impressed by the gift of scientific foresight that Serhiy Andriyovych possessed. S. Smorshchok was one of the first in Ukraine who use the antioxidants and enterosorbents in burn disease conditions. His in–depth scientific experiments using a set of modern methods have made a significant impact to biology, medicine, in particular, combustiology” [4].

Serhiy Andriyovych Smorshchok's life ended untimely, when on the blossoming May day of 1995 he died from a long serious illness. Already ill, knowing his diagnosis, he courageously continued to work, advising his students, caring for his family. The results of his many years of creative work have promoted to raising the level of the Ukrainian histological school, have made a significant contribution to the development of combustiology and occupy a worthy place among the achievements of modern morphology.

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