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To the 135th Anniversary of the Founding of the Pathological Anatomy Division of the Siberian State Medical University

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ABSTRACT

The article is devoted to the history of the Pathology Department of the Siberian State Medical University, which will celebrate its 135th anniversary on May 6, 2025, since its foundation and opening within the framework of the Siberian Imperial University established in 1878. The article presents and describes the most important historical events and achievements in scientific and pedagogical activities, as well as in practical medical and diagnostic work.

The Pathology Department has always occupied a leading and strong position among the strongest and most authoritative Departments of the University. Traditionally, from the moment the department was founded and to this day, teachers have been engaged in practical clinical activities, combine the teaching process with the full-time work of a pathologist, conduct autopsies and intravital diagnostics, examining biopsy and surgical material.

Keywords: Pathological Anatomy Division of the Siberian State Medical University, history of foundation and development

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К 135-летию со дня основания кафедры патологической анатомии Сибирского государственного медицинского университета

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РЕЗЮМЕ

Статья посвящена истории кафедры патологической анатомии Сибирского государственного медицинского университета, со дня основания и открытия которой в рамках образованного в 1878 г. Императорского Томского университета 6 мая 2025 г. исполняется 135 лет. Представлены и описаны важнейшие исторические события и достижения в научно-педагогической деятельности и практической лечебно-диагностической работе.

Кафедра патологической анатомии всегда занимала ведущие и прочные позиции в ряду сильнейших и авторитетных кафедр университета. Традиционно с момента основания кафедры и по настоящие дни преподаватели занимаются практической клинической деятельностью, совмещают педагогический процесс с полноценной работой врача-патологоанатома, проводят аутопсии и прижизненную диагностику, исследуя биопсийный и операционный материал.

Ключевые слова: кафедра патологической анатомии Сибирского государственного медицинского университета, история основания и развития

Конфликт интересов. Авторы декларируют отсутствие явных и потенциальных конфликтов интересов, связанных с публикацией настоящей статьи.

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On May 6, 2025, the Pathological Anatomy Division of the Siberian State Medical University will celebrate its 135th anniversary since its establishment as part of the Siberian Imperial University, founded in 1878. Over more than a century of its history, the department has grown and solidified its reputation as one of the strongest and most respected departments within the university. This achievement is undoubtedly due to the people who devoted their lives to this department.

The official founding date of the Division is considered to be May 6, 1890. That year, Konstantin Nikolaevich Vinogradov was appointed professor ordinarius of the Pathological Anatomy Division. In 1870, Vinogradov K.N. graduated with honors from the Saint Petersburg Medical and Surgical Academy, where he developed an interest in histology and, under the guidance of K.F. Slavyansky, authored two works: *On the Study of Myxomas in Fetal Membranes* and *The Histological Structure of the Amniotic Membrane in Humans*. In 1873, Vinogradov K.N. defended his doctoral dissertation *Materials for the Pathological Anatomy of Glanders and Anthrax*. Despite his brief tenure as head of the department (until 1892) Vinogradov K.N. made significant contributions by creating and developing the educational process within the discipline from scratch. He also initiated the establishment of a pathology institute.

During the first academic year, Vinogradov personally delivered all lectures and practical classes. Thanks to his work, by 1891, the division was equipped with 36 Zeiss, Leitz and Reichert microscopes. Effective student training required demonstrative pathological materials, however, at that time, the university lacked both a museum of pathological anatomy and a collection of microscopic specimens. It is known that Professor Vinogradov K.N. brought 1500 histological slides with him to Tomsk from Saint Petersburg, which were used to demonstrate various pathological processes to students, along with more than 200 macroscopic specimens for the museum and practical training.

Today, the division's museum collection comprises thousands of specimens, but it was Vinogradov who laid its foundation and continued to expand it during his tenure. Vinogradov K.N. also engaged in practical work, conducting autopsies on patients with various pathologies. During one such autopsy, he discovered a previously unknown parasite in the liver, later named the Siberian fluke (Opisthorchis felineus). This discovery was the most significant in Vinogradov's career and resulted in five scientific publications during his time in Tomsk. In 1892 Professor Vinogradov left the university to accept a position as a professor ordinarius at the Military Medical Academy in Saint Petersburg [1, 2].

The second head of the division was Professor Ivan Ivanovich Sudakevich who led it for four years (1892-1896) until his death from complications of tuberculosis. Sudakevich I.I. was a representative of the Kiev school and a student of the renowned Russian pathologist and infectious disease specialist G.N. Minkh, and focused his scientific interests on infectious pathology. In 1888, he defended his doctoral dissertation *The Pathology of Leprosy*. During his time in Tomsk, he studied trichinosis (*Changes in Muscle Fibers in Trichinosis: Muscle Phagocytosis*, 1895) and explored phagocytic mechanisms in malignant tumors (*On the Phenomenon of Metachromasia in Sporozoans Parasitic in Cancer Cells*, 1892 and *Phagocytic Phenomenon in Cancer Tumors*, 1895). Most of Sudakevich's scientific work was published in international journals. During his tenure as head of the division, Sudakevich significantly expanded and enriched the collection of microscopic and macroscopic specimens. His scientifically rich and elegantly delivered lectures were consistently popular among students [1].

In 1897 the division was headed by professor ordinarius Fedor Ivanovich Romanov. Romanov graduated with honors from the Medical Faculty of Kharkov University and defended his doctoral dissertation *Changes in the Thyroid Gland with the Internal Use of Potassium and Sodium Iodides* in 1889. He moved to Tomsk in 1891, where he worked as a prosector and an acting associate professor in the Pathological Anatomy Division of the Tomsk Institute. Although Romanov officially received the title of professor ordinarius only in 1901, he was permitted to lecture during the tenure of Professor Sudakevich I.I.

Romanov's scientific work focused on parasitology, particularly echinococcosis, tumor pathology and infectious diseases. He actively participated in the activities of the Society of Naturalists and Physicians. During his time in Tomsk he published 15 scientific articles and mentored Viktor Pavlovich Mirolyubov who later became the head of the Pathological Anatomy Division [1].

The next head of the division was appointed only in 1908. Professor Mikhail Mikhailovich Pokrovsky, a 1888 graduate of the Saint Petersburg Medical and Surgical Academy, took the position. Between 1889 and 1898, Pokrovsky worked at the Moscow University and later spent six years as a prosector at the Saint Petersburg Women's Academy. His tenure as head of the Pathological Anatomy Division coincided with the division's move to the newly constructed building of the New Anatomical Complex within the university grove.

Pokrovsky completely reorganized the museum, acquiring 17 display cabinets, which have been preserved and are still in use today. Most of Pokrovsky's scientific work focused on the foundational principles of pathological anatomy and its practical applications. He authored *A Guide to Autopsies for Beginners*, *On the Techniques of Pathological Autopsy*, as well as works such as *The Beginning of Pathology: General Pathology* and *What Are Pathological Phenomena?*. Additionally he published a series of articles on infectious and oncological topics. In 1919, Professor Pokrovsky moved to Nizhny Novgorod, where he headed the Department of General Pathology and Pathological Anatomy at the Medical Faculty of Nizhny Novgorod University [1].

In 1922, the Pathological Anatomy Division was headed by Viktor Pavlovich Mirolyubov. Born into a priest's family in Saratov Province in 1910, Mirolyubov moved to Tomsk in 1890 after studying at the Balashov Theological School and Astrakhan Theological Seminary. In Tomsk, he entered the university, graduating with honors in 1896 with a degree in medicine. By May 1897, he had been appointed an acting prosector in the Pathological Anatomy Division. In 1900, Mirolyubov V.P. was called to active military medical service in China. During the Russo-Japanese War (1904–1905), he served as a field physician with the active army. After returning in 1910, Mirolyubov V.P. defended his doctoral dissertation *On the Development of Alveolar Echinococcus in Humans* in 1911 and was appointed a private docent. By 1922, he had become a full professor. His dissertation gained widespread recognition in the scientific community for its uniqueness and was the only work on this problem in Russian literature at the time. It was actively cited and translated into foreign languages. He was awarded the degree of Doctor of Medical Sciences and the title of professor in 1935.

Throughout his years at the division, Mirolyubov actively lectured on general and specific pathological anatomy, conducted practical classes with students, paid special attention to autopsy work, and, in particular, diagnosed complex biopsy and surgical material. He also consulted on challenging cases requiring differential diagnoses. Professor Mirolyubov V.P. sought to collaborate closely with Western European universities. He visited various cities, including Paris, Zurich, Freiburg and Munich, to study the nuances of teaching pathological anatomy

and the intricacies of a pathologist's work. His collaboration with the Berlin School of Pathology, led at the time by Johann Orth - a student of Rudolf Virchow - was especially notable.

As a result of this activity, Mirolyubov published the monograph *On Parenchymal Liver Cancer*. Initially featured in Virchow's Archive, it was later released as a standalone publication. The work was distinguished by its proposal of the first classification of parenchymal liver cancer. Mirolyubov was a talented, organized, and deeply dedicated teacher and a practicing physician. He also possessed exceptional humbleness and humility. He authored over 40 scientific works on various pathological issues. Among his distinguished students was academician Innokenty Vasilyevich Toroptsev [1].

Innokenty Vasilyevich Toroptsev became the head of the Pathological Anatomy Division in 1947 following the death of Professor V.P. Mirolyubov. After graduating from a Soviet labor school in 1926, Toroptsev entered the Medical Faculty of Tomsk State University. During his early years at the university, he actively participated in the scientific circle of the Department of General Pathology under the guidance of A.D. Timofeevsky. While still a student, Toroptsev received several patents for inventions. In his fourth year, he developed an interest in pathological anatomy and spent his free time attending autopsies, learning the intricacies and challenges of a pathologist's work. After graduating from the university in 1931, Toroptsev entered a postgraduate program at the Pathological Anatomy Division and became an assistant in 1933. His candidate dissertation *Scleropigment Nodules in the Spleen* was successfully defended in 1937. Ten years later, in 1947, he defended his doctoral dissertation *Materials on the Problem of Plant-Based Bactericides*, and was awarded the title of professor the same year.

Toroptsev authored 134 scientific works, including five monographs and numerous articles published in international journals. He held 16 patents for inventions, all of which were officially recognized. Toroptsev initiated research into the mechanisms of action of electromagnetic fields and their potential applications in medical practice. He established the only interdisciplinary magnetobiological laboratory in Tomsk, based on the Polytechnic and Medical Institutes. Under his scientific supervision, 30 candidate and 22 doctoral dissertations were successfully defended. Among his well-known students were prominent physicians and scientists, including E.V. Goldberg, V.P. Desyatov, A.I. Ryzhov and D.A. Gratsianov [1, 3, 4].

In 1961, for his outstanding contributions, Toroptsev received scientific recognition and was elected a corresponding member of the Academy of Medical Sciences of the USSR. In 1969, he became a full member. Practical work held a special place in Toroptsev's life. He was a meticulous autopsy technician, highly skilled in clinico-morphological analysis and an exceptionally knowledgeable, responsible, and erudite pathologist [5, 6].

Due to illness, Toroptsev stepped down from his duties in 1983, and Associate Professor Galina Viktorovna Borisova served as acting head of the division from 1983 to 1987. Borisova G.V. joined the Pathological Anatomy Division at Tomsk Medical Institute in 1953 as an assistant. In 1959, without completing a formal postgraduate program, she successfully defended her candidate dissertation *Pathological Anatomy of Listeriosis in Experimental Animals*, under the supervision of Professors I.V. Toroptsev and S.P. Karpov, a corresponding member of the Academy of Medical Sciences of the USSR.

The results of her research were summarized in a monograph and published in the *Archive of Pathology* central journal . These findings were referenced in multi-volume pathological anatomy guides and the Great Medical Encyclopedia. Borisova co-authored the monograph *Listeriosis: Microbiology, Clinic, Pathological Anatomy, Pathogenesis, Treatment, Epidemiology, Laboratory Diagnostics*, which remains a priority reference for researchers studying this disease. Over her career, Borisova published 61 scientific works. In recognition of her organizational talent and high professional and pedagogical standards, Borisova was awarded the title Honored Worker of Higher Education in 2001 [4].

In September 1987, Vladimir Mikhailovich Perelmuter was appointed the head of the Pathological Anatomy Division. Born in Daugavpils, Latvian SSR, Perelmuter graduated from Tomsk Medical Institute in 1964 after attending Secondary School 24 in Tomsk. As a student, he actively participated in the microbiology department's scientific circle, where he studied the incubation period of listerial infection under the guidance of Y.N. Odintsov.

After graduating from the institute, Perelmuter worked as a microbiologist at the Tomsk Research Institute of Vaccines and Serums while pursuing postgraduate studies in histology part-time. In 1972,

he served as a sanitary doctor for Tomsk's sanitary-epidemiological service and starting in 1973, as a pathologist at the Tomsk Regional Oncology Dispensary. In 1975, Perelmuter V.M. was appointed an assistant at the Pathological Anatomy Division. Five years later, he was appointed the head of the Inter-University Magnetic Biology Laboratory (Laboratory Number 25 at the Institute of Nuclear Physics, Tomsk Polytechnic Institute). In 1981, under the guidance of Candidate of Medical Sciences Y.N. Odintsov and Doctor of Medical Sciences Professor N.M. Tikhonova, Perelmuter V.M. successfully defended his candidate dissertation *Morphofunctional Assessment of the State of Lymphoid Organs and the Liver in Early Stages of Experimental Chronic Listerial Infection in Mice*, at the Academic Council of Novosibirsk Medical Institute. He later studied the biological effects of millimeter-range electromagnetic radiation and discovered the phenomenon of functional asymmetry in the bone marrow of mice's hind limbs and inguinal lymph nodes.

These findings led to new research into the functional asymmetry of parenchymal organs under normal and pathological conditions, becoming a primary research focus under Perelmuter's leadership. From 1987 to 2012, Perelmuter served as the head of the Pathological Anatomy Division. In 1990, the USSR State Committee for Public Education awarded him the academic title of associate professor. In 1996, he successfully defended his doctoral dissertation *Functional Asymmetry of the Thymic-Adrenal System*, supervised by Academician of the Russian Academy of Medical Sciences, Professor E.D. Goldberg. In 1998, Perelmuter was awarded the title of professor. Between 2002 and 2019, he simultaneously headed the Department of Pathology and Cytology at Tomsk Oncology Research Institute.

Perelmuter was an innovator in pedagogical and scientific activities. He introduced a rating system for evaluating students' knowledge in pathological anatomy, developed a comprehensive digital lecture course and applied an integrated approach to studying pathological processes and nosological forms, emphasizing pathogenetic and clinical parallels. Under his leadership, the department digitized its macro-specimen collection and created high-quality illustrative materials for educational purposes. A computer lab was established to enable students, interns, residents, postgraduates and physicians to study morphological changes at both macroscopic and microscopic levels.

Perelmuter's primary research interest was the mechanisms underlying the formation and progression of malignant neoplasms. He developed new scientific directions in pathology and oncology, focusing on tumor heterogeneity, the role of the tumor microenvironment and chronic inflammation in the pathogenesis of malignant tumor growth. He introduced an innovative approach to assessing the pathological manifestations of tumor heterogeneity in breast cancer. His research demonstrated that morphologically distinct carcinoma structures could be associated with varying prognoses.

Together with his student, Doctor of Medical Sciences V.N. Manskikh, Perelmuter proposed an original hypothesis explaining the selective metastasis of malignant neoplasms to specific target organs. The hypothesis included experimental predictions and potential strategies for metastasis prevention. Furthermore, they proposed a hypothesis to explain the mechanisms of lymphatic metastasis in sarcomas.

Perelmuter is a highly qualified specialist in morphological tumor diagnostics. At the Tomsk Oncology Research Institute, he established one of Russia's first immunohistochemical and molecular research laboratories for precise verification of malignant processes. These advanced methods improved diagnostic accuracy, optimized cancer treatment, and achieved better clinical outcomes. Under Perelmuter's supervision, 8 doctoral and 14 candidate dissertations were defended. His notable students include Professor M.V. Zavyalova, Professor S.V. Vtorushin, Associate Professor I.L. Purlik, Doctors of Medical Sciences V.N. Manskikh, L.A. Tashireva, and N.V. Vasiliev.

Since 2012, Pathological Anatomy Division has been headed by Professor Marina Viktorovna Zavyalova. In 2004, under the supervision of Professors V.M. Perelmuter and E.M. Slonimskaya, M.V. Zavyalova successfully defended her candidate dissertation *Features of Breast Cancer Progression Depending on the Morphological Variant of the Tumor and Background Dysplastic Processes* at the Dissertation Council of the Tomsk Oncology Research Institute. In 2009, she defended her doctoral dissertation *Relationship Between Tumor Morphological Structure, Lymphatic and Hematogenous Metastasis in Infiltrative Ductal Breast Cancer*. In 2013, she was awarded the title of professor.

Professor Zavyalova continues the legacy of V.M. Perelmuter, developing both the educational and scientific activities of the department. She restructured

the complete lecture course on pathological anatomy, adapting it to practical clinical work and current clinical guidelines. As a practicing pathologist at the Pathological Anatomy Division of Siberian State Medical University Clinics (under the Russian Ministry of Health), Zavyalova integrates her professional expertise into the educational process. This led to the creation of a digital archive of histological preparations and the development of educational materials with high-quality, original illustrations. Zavyalova M.V. introduced mentorship and gamification into the educational process to enhance student engagement.

She also places great emphasis on organizing extracurricular activities to strengthen students' knowledge and motivation. To prepare students for clinical disciplines and ensure the continuity of knowledge from junior to senior years, she organized and implemented a system of student clinical-anatomical conferences. The mentoring system allows students to acquire additional skills and competencies.

Zavyalova's scientific interests include the study of tumor progression mechanisms, particularly intratumoral heterogeneity, invasion, generalized metastasis, and primary-multiple tumor growth. As a leading researcher at the Department of General and Molecular Pathology at the Tomsk National Research Medical Center, Zavyalova has supervised the defense of 15 candidate dissertations. She actively trains personnel to strengthen the pedagogical and research activities of the division. Among her students are Associate Professor N.V. Krakhmal, N.S. Telegina, D.S. Pismenny and V.V. Alifanov.

Over the years, the division has been home to outstanding specialists, educators, and prosectors, including Professor D.A. Gratsianov, Associate Professor O.M. Ordina, T.G. Kamneva and B.V. Novitsky. Throughout its existence, the Pathological Anatomy Division has been one of the leading divisions at Siberian State Medical University, excelling in teaching, organizational, and scientific activities. It has provided students with in-depth knowledge, clinical reasoning skills, and has trained talented pedagogical and scientific personnel. The division's contributions have significantly impacted both science and practice.

Today, the division's academic staff includes 4 Doctors of Medical Sciences and 7 Candidates of Medical Sciences. Since its founding, division faculty members have traditionally combined teaching with practical work as pathologists, performing autopsies and examining biopsy and surgical material. Since 2010, the clinical base of the division has been represented by the Pathological Anatomy Division of Siberian State Medical University Clinics headed by Professor S.V. Vtorushin.

The combination of theory and practice, requiring constant professional development from instructors, makes the educational process engaging and enriching for students. For of them, the study of pathological anatomy remains one of the most memorable experiences of their medical education.

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