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## ANNIVERSARY OF THE NORTHERN MEDICAL UNIVERSITY

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**Abstract.** The article presents an overview of historical documents about the 90-year history of the Northern State Medical University. The substantiation of the need to create a medical university in the European North of Russia is presented. The facts of formation, work in the war and post-war years are described in detail. A large section is devoted to the recent history of the university, achievements and plans for the future.

**Key words:** history of medicine; medical university; Arkhangelsk; European North of Russia

## ЮБИЛЕЙ САМОГО СЕВЕРНОГО МЕДИЦИНСКОГО ВУЗА

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**Резюме.** В статье представлен обзор исторических документов о 90-летней истории Северного государственного медицинского университета. Представлено обоснование необходимости создания медицинского вуза на Европейском Севере России. Подробно изложены факты становления, работа в военные и послевоенные годы. Большой раздел уделен новейшей истории университета, достижениям и планам на будущее.

**Ключевые слова:** история медицины; медицинский вуз; Архангельск; Европейский Север России

## INTRODUCTION

The year 2022 marks the 90th anniversary of the Northern State Medical University (SSMU), which was established in 1932 as the Arkhangelsk State Medical Institute (ASMI). Archival documents and other historical sources testify about the extremely low level of health care in the Northern Territory, formed in 1929 by uniting the Arkhangelsk and Vologda provinces, the autonomous Komi (Zyryansk) region and the islands of the Arctic Ocean and the White Sea. In 1929–1930 an All-Union census of health care institutions and medical personnel was conducted, including

Northern Territory. All medical organizations regardless of departmental affiliation and all medical personnel (including private medical practitioners and unemployed doctors, as well as those in detention houses, and administrative exile) were taken into account. The census showed an acute shortage of medical personnel: 1 doctor for every 4 thousand of urban population and 1 doctor for every 18–20 thousand in the countryside. There was a critical shortage of surgeons, gynecologists, pediatricians, sanitary doctors and narrow specialists, especially otolaryngologists, ophthalmologists, phthisiologists. Unfavorable climatic

conditions, poor transport links between the settlements of the region and the center of the country, miserable living conditions did not contribute to the consolidation of medical personnel. There was a mass departure of physicians after 1–3 years of work in the North [1].

## THE BEGINNING

The Council of People's Commissars of the Russian Soviet Federative Socialist Republic (RSFSR) by its Resolution No. 1055 "On improvement of medical and sanitary services for the workers of the timber export industry of the Northern Territory" of October 2, 1931 obliged the People's Commissariat of Health to organize a medical institute in Arkhangelsk. A two-story stone building, where the Arkhangelsk City Council used to be located, was handed over to the Institute as a matter of urgency. On July 6, 1932 first preparatory courses began, and on August 4, 1932 the first director of the Institute Mikhail Yurievich Krivitsky (1896–? years, repressed; therapist, associate professor, health care organizer, the first director of Arkhangelsk State Medical Institute (ASMI)) started his work. The first and main faculty was medical and prophylactic one, additionally the faculty of working youth (Rabfak) was created. The classes began on December 16, 1932 with a lecture of Professor Mikhail Konstantinovich Zamyatin (1895–? years; doctor of medical sciences, professor, organizer and head of the normal anatomy department of ASMI in 1932–1936) on normal human anatomy. Professors from Leningrad, Kazan and other cities with medical universities were sent to Arkhangelsk to give lectures. The first teachers of ASMI were trained at the central bases, the teams of the newly established departments were actively engaged in the preparation of demonstration materials, equipped laboratories.

Organizing the teaching of clinical disciplines was a difficult problem as there were not enough clinical bases. In the early 1930s in Arkhangelsk there were functioning the City Soviet Hospital with 600 beds in ten specialized departments, the hospital of maritime transport workers, the central outpatient clinic named after V.I. Lenin, the ambulance station and emergency rooms at timber factories (prototypes of future health centers), tuberculosis sanatorium, as well as physiotherapeutic and pathological anatomical institutes. Construction of a new multidisciplinary regional clinical hospital was launched to serve as the main clinical base. During the ten-year period of its construction it changed several names (regional hospital, clinical hospital, second city clinical hospital,

regional clinical hospital). The long and protracted construction of the awaited hospital was completed after the next change of administrative-territorial division of the Northern Territory and the restoration of the Arkhangelsk region in 1937, along with the Vologda region, Nenets Autonomous National District and the Autonomous Republic of Komi.

The number of students studying in ASMI increased from year to year, in 1937 there were already 920 students. The teaching staff in the first academic year consisted of only 15 full-time employees, and by 1937 it increased to 125 with 191 full-time teaching and research positions. The Institute had 14 professors with the degree of Doctor of Medical Sciences who came from Leningrad, Kiev, Kazan and Voronezh. The annual planned enrollment of students for the first year of ASMI was not always possible to fulfill, so the applicants who did not pass the competition in the medical universities of Moscow and Leningrad were enrolled. The first graduation of doctors took place in July 1937, and every fourth of 129 graduates received a diploma with honors. According to the results of the spring examination session, ASMI took the 1st place among medical universities of RSFSR and the 3rd place among medical universities of the Soviet Union. The majority of young doctors started to work independently in medical institutions of the newly formed Arkhangelsk region and the Komi Republic. In the pre-war years, the Institute continued to improve educational and methodological work, strengthening of material and technical equipment of ASMI and clinical bases in the regional center [2].

## THE WAR YEARS

The international situation was alarming. The first batches of wounded and sick were delivered from the Soviet-Finnish front in the winter of 1939–1940. The Arkhangelsk garrison hospital was transformed into an evacuation hospital, where the staff, students and young scientists of ASMI were involved, among whom was the future academician Nikolai M. Amosov (1913–2002; MD, Professor, one of the pioneers and founders of Russian thoracic and cardiovascular surgery, biocybernetics, an outstanding public figure and promoter of healthy lifestyle, creator of a large school of thoracic and cardiovascular surgeons; graduated from ASMI in 1939). In 1940 Associate Professor Petr P. Erofeev (1903–1961; MD, Professor, Director of ASMI in 1940–1947) was appointed to Director of ASMI. Petr P. Erofeev was a prominent scientist, phthisiatrist, as well as an excellent organizer of

health care and higher education during the difficult years of the Great Patriotic War. During the war period ASMI faced a difficult task: the forced reduction of the term of study and the number of teachers to maintain the achieved high level of educational process and quality training of doctors. With the beginning of the war the academic year in ASMI began on August 1, 1941. According to the new curriculum students of the II course had to complete their studies at the Institute in March 1944, and those studying at the III course — in February 1943. In June 1941, 196 doctors trained according to the pre-war curriculum were graduated, and in December of the same year — the second graduation of 208 students taught according to the shortened curriculum. The shortened training period for medical students had a negative impact on the quality of training of graduates. Awareness of this fact by the top leaders of medical education led to the restoration of pre-war curricula and programs in accordance with the order of the All-Union Committee for Higher School Affairs of June 19, 1942. This order clearly regulated the arrangement of credits and examinations.

Studying was difficult. Students, half-starved and even straving, as well as all residents of Arkhangelsk in that war time, often wore coats in cold lecture halls while listening and writing down lectures on sheets of technical paper and newspapers, dipping pen pens in ink pots that they carried with them. In practical classes they mastered laboratory studies of blood and other biological materials, studied human anatomy (there were enough corpses). In hospitals they studied methods of examination of patients with diseases and injuries. When they had free time, medical students (and they were mostly girls) unloaded echelons with the wounded, carried and transported them across the Northern Dvina on the ice in winter, worked as nurses and orderlies, donated blood, although they lived on hunger. At night they went out to work with talmans in the seaport to account for unloaded military equipment and cargoes delivered on the ships of the allied northern convoys. Ships were moored in the right bank port of Bakaritsa and the left bank deep-water port area of Ekonomiya, to which there were no railroad tracks. In the pre-war period the Northern Railway connecting Arkhangelsk with the center ended on the right bank in the districts of Bakaritsa and Pirsy.

In 1941, the Soviet army was primarily lacking tanks, airplanes, explosives, which were to be urgently sent to all fronts, and first of all — to the combat units defending Moscow. The students of ASMI were assigned a task — to take part in the

construction of a narrow gauge railroad connecting the port district of Ekonomiya with the crossing to the left bank of the Northern Dvina. 300 students in severe winter conditions of 1941–1942 selflessly worked on the construction of the narrow gauge railroad, laying sleepers and rails. The task was completed ahead of schedule. Some of the students were engaged in collecting firewood for the educational building and dormitory. The others were on duty on the attics and roofs of buildings during German air raids and bombing of Arkhangelsk, showing courage and heroism in extinguishing incendiary bombs. In 1941, teachers and students of ASMI transferred bonds for 70,000 rubles to the USSR Defense Fund, continuing to deduct money for the front needs on a monthly basis. During the war years they transferred 257,000 rubles for the construction of a squadron and a tank column. Hunger and cold, unsanitary conditions, lack of disinfectants led to outbreaks of infectious diseases among the civilian population. Typhoid fever and typhus, measles and dysentery were brought to the Arkhangelsk region and the regional center by immigrants from other regions, sent for logging and fishing. Brigades of students went around residential houses and hostels, enterprises and various organizations, where they fought against unsanitary conditions, carried out anti-epidemic measures and sanitary-educational work. Unfortunately, during the hardest war period students of the medical institute were ill with alimentary dystrophy, hypovitaminosis, infectious and other diseases; some of them died before realizing their dream — to become a doctor. In total, 943 people graduated from ASMI during the war years, more than 300 of them were called up to the warring units of the land forces and naval fleets after graduation.

During the Great Patriotic War a powerful hospital base of the Karelian Front was deployed in the Arkhangelsk region. In order to improve treatment and diagnostic work in evacuation hospitals, the staff of clinical departments of ASMI worked as consultants. Professors were members of the hospital council of the Arkhoblzdravotdel (department under the Commissariat of Health in Arkhangelsk region). The employees of ASMI Georgy Andreevich Orlov (1910–1986; doctor of medical sciences, professor, head of the chair of general surgery of ASMI in 1944–1981; creator of the largest scientific and practical school of surgeons in the European North of Russia) and Faina Ignatyevna Sharapova (1913–1968; PhD in medical sciences, associate professor, head of the chair of general surgery of ASMI in 1944–1981) had senior positions in evacuation hospitals.

Prof. G.M. Davydov, who came from besieged Leningrad, was appointed chief surgeon of the Arkhangelsk region and scientific adviser of the regional blood donor service in 1942. He was repeatedly sent to district hospitals to perform surgical operations on recruits to the front-line armies. Nevertheless, research work continued at the medical institute. The annual scientific sessions were attended by the staff of ASMI, doctors of evacuation hospitals and hospitals of the regional center, as well as senior students. The staff of ASMI developed new surgical interventions and medical technologies that allowed saving the lives and restoring health of many defenders of the homeland and civilians [3].

The staff of ASMI provided great assistance to civil healthcare, including evacuees. Professor Maria Vladimirovna Pikkel (1911–2008; Doctor of Medical Sciences, Professor, Head of the Department of Pediatrics of ASMI in 1966–1988) wrote in her memoirs: "Immediately after the opening of the Ladoga "Road of Life" from Leningrad, children and teenagers began to come to us. Among them was the son of writer Yuri German, who died a day later in my isolation unit... Arkhangelsk children were not much better. Among them there were 4 or 5 children with noma in the isolation unit. This disease was also called "water cancer", and the word "cancer" in this disease did not mean its true malignant nature, but their imminent death. There were no uncontrollably multiplying cells, but on the contrary — uncontrollable decay of tissues under the influence of special putrefactive bacteria in the complete absence of defense of the child's body. The picture of the disease in all these children was terrible. Fortunately, they did not come in all at once — no more than two children at the same time. I treated these extremely emaciated patients for a very long time. They were fed with great difficulty. It is difficult to describe the struggle for their lives. I came up with the idea to start treating them with blood transfusion and a new sulfidine which had just appeared at that time, it was active against many untreatable infections... This treatment was very effective — not a single child died, although recovery was slow — it lasted for several months" [4].

The most important inventions and new medical technologies of ASMI employees in 1941–1945 were honored with awards. Thus, chemist, associate professor A.I. Vedrinsky was the first in ASMI to be awarded after the invention of non-freezing ointment for artillery gun sights (based on alginic acid from White Sea algae). In co-authorship with surgeon Prof. G.A. Orlov he also inven-

ted "Algotan" ointment for treatment of thermal burns on the basis of algae. Other scientists of ASMI together with algologists also implemented the results of research in practice, including in the food industry (bread, povidlo, etc.). In addition to algae, other natural organic components were actively introduced into practice. The method of Israel Isaakovich Matusis (1910–1975; doctor of medical sciences, professor, biochemist, scientist-vitaminologist, head of the Department of Biochemistry of ASMI in 1939–1949) for obtaining dehydrated concentrate of vitamin C from pine needles without the use of activated carbon, as well as his technology in co-authorship with M.D. Kiverin for the production of extracts from pine needles were in demand. Northern medicinal plants were widely used for the manufacture of medicines. The staff of ASMI passed the severe military trials with honor. The motherland highly appreciated the heroic work of the staff during the Great Patriotic War [5].

## THE POST-WAR PERIOD

The war was followed by a succession of new heads of the university. In 1947, Associate Professor Sergei Nikolaevich Gildenskiold (1899–1974; military doctor, Ph.D of Medical Science., associate professor, director of ASMI in 1947–1952) was appointed to the post of director of ASMI; subsequently, in 1952 — Professor Ivan Nikitich Matochkin (1899–1973; Ph, Professor, Head of the Department of Normal Anatomy of ASMI), in 1953 — Alexander Andreevich Kirov (1913–1977; Doctor of Medical Sciences, Professor, Head of the Department of Hospital Surgery of ASMI in 1971–1977), a graduate of ASMI, Associate Professor. In 1958 the Faculty of Stomatology was opened in ASMI. The first dean was Associate Professor Ivan Vasilievich Vishnevsky (1905–?; Candidate of Medical Sciences, Associate Professor, Head of the Department of Surgical Stomatology of ASMI in 1960–1962, organizer of the Faculty of Stomatology of ASMI). Subsequently there were established following departments: in 1960 — the Department of Orthopedic Dentistry (first head — Associate Professor L.N. Kaftasieva); the Department of Therapeutic Dentistry (first head — V.M. Kukanov); the Department of Maxillofacial Surgery and Surgical Dentistry (first head — Associate Professor I.V. Vishnevsky).

A real breakthrough in Arkhangelsk dentistry was coming, outpatient clinics were built. In 1961 Ivan Gavrilovich Chernetsov (1904–1978; therapist, Candidate of Medical Sciences, Associate Professor, Rector of ASMI in 1961–1963) was appointed Rector of ASMI, 2 years later he was re-



placed by Victor Demjanovich Dyshlovoy (1928–2011; Doctor of Medical Sciences, Professor, Head of the Department of Pathophysiology of ASMI in 1963–1966, Rector of ASMI in 1963–1965). Each head made his significant contribution to the development of the university, but their frequent change was not useful.

In 1965 a bright page in the annals of ASMI began, which was headed by the graduate of ASMI Associate Professor Nikolay Prokopyevich Bychikhin (1927–1987; surgeon, promoter of higher medical education, medical science and public health in the European North of the Russian Federation, Doctor of Medical Science, Professor, Head of the Department of General Surgery of ASMI in 1981–1987). Under the leadership of Nikolay Prokopyevich many new directions in Arkhangelsk medicine were developed. He led ASMI for 22 years, he passed away early, the book "A worthy son of the Fatherland" was written about him. Under the leadership of the new rector the laboratory for studying the problems of human acclimatization in the Far North (the head — PhD in medical sciences N.P. Neverova) was created. In 1960s the Faculty of Public Professions with two-year term of study was opened in ASMI, the first student construction team was created. Much attention is paid to the fight against tuberculosis, thus, the Department of Phthisiopulmonology is founded (the first head — Associate Professor A.R. Shevchenko). In 1969 the institute newspaper "Medic of the North" was launched, in 1970 the Council of Young Scientists was established. During this period "Search" studio-theater was created in ASMI, later it was the winner of the Lenin Komsomol Prize of the Central Committee of Komsomol and Arkhangelsk Regional Komsomol Organization (permanent head of the studio — Y.L. Pacevich, 1946–2012; Doctor of medical sciences, professor, corresponding member of the Academy of Social Sciences, Honored Worker of Culture of the Russian Federation). In 1970s new subdivisions were created in ASMI, which quickly became powerful structures: 1971 — the Department of Traumatology, Orthopedics and Military Surgery (the first head — Dr. M.Sc., Professor Vladimir Fedorovich Tsel, 1898–1974; Dr. M.Sc., Professor, Head of the Department of Hospital Surgery of ASMI in 1959–1971, Department of Traumatology, Orthopedics and Naval Surgery of ASMI in 1971–1974), 1975 — the course of anesthesiology and resuscitation, later — the Department of Anesthesiology and Resuscitation (the head — PhD in Medical Sciences, associate professor Eduard Vladimirovich Nedashkovsky, D.M.Sc., pro-

fessor, founder and first head of the Department of Anesthesiology and Reanimatology of ASMI, honorary President of the Association of Anesthesiologists and Reanimatologists of the North-West of Russia), 1978 — the Department of Pediatric Dentistry (first head — associate professor Pavla Grigorievna Knyazeva, 1929–2016; PhD in medical sciences, Assistant of the Department of Therapeutic Dentistry of ASMI, Head of the course of pediatric dentistry in 1976–1986).

## THE PEDIATRIC FACULTY

In 1977 the Pediatric Department was established as part of the Faculty of Medicine, which in 1979 received the status of the Pediatric Faculty. The first dean — Associate Professor Valery Aleksandrovich Kudryavtsev (1941–2001; pediatric surgeon, honored doctor of the Russian Federation, the first chief pediatric surgeon and organizer of pediatric surgery service in Arkhangelsk and the whole region) — was a legendary person, the book about whom was written [6]. The basis of the new faculty was the Department of Pediatric Diseases of the Faculty of Medicine. Since 1935, under the leadership of the first heads (graduates of the Kazan Pediatric School, Professor Y.V. Makarov and Associate Professor A.G. Suvorov) it had accumulated a great educational, methodological and scientific experience. The Department of Pediatric Diseases of the Faculty of Medicine received the status of the Department of Pediatrics of the Faculty of Pediatrics (the first head — Professor M.V. Pikkell, later — Professor V.A. Ternovskaya, Associate Professor A.Y. Trubina and Professor S.I. Malyavskaya). Owing to the work and organizational talent of V.A. Kudryavtsev, the faculty was rapidly gaining strength, its personnel potential was growing, new pediatric departments were opened. Many teachers were awarded governmental awards, honorary title "Honored Doctor of the Russian Federation" for their conscientious, active and fruitful work. In the jubilee year 1982, the year of 50th anniversary of ASMI, the Department of Pediatric Surgery was established, which was headed by Candidate of Medical Sciences, Associate Professor V.A. Kudryavtsev, being the permanent chief pediatric surgeon of the Arkhangelsk region and chief physician of the Children's Regional Clinical Hospital since its opening in 1972. In 1987 he was also elected rector of ASMI. In the late 1980s — early 1990s new departments were actively created in ASMI, among them: the Department of Propaedeutics of Pediatric Diseases and Polyclinic Pediatrics (headed by Professor V.I. Makarova),

the Department of Pediatric Infections (headed by Professor L.V. Titova), the Department of Neonatology and Perinatology (headed by Professor G.N. Chumakova), the Department of Polyclinic and Social Pediatrics (headed by Professor L.I. Menshikova).

The first graduation of pediatricians took place in 1983. In the final act of the state examination commission, the chairman of which was the most famous pediatrician in the country, Professor Nikolai Pavlovich Shabalov, it was noted that graduates had high quality of training, which is as good as in the experienced Leningrad Pediatric Institute. Over the years of its existence the faculty has trained more than 3000 pediatricians. Most of them work in cities and districts of the North-West of Russia. The best graduates of the faculty have shown themselves as organizers of practical healthcare, others have become teachers of pediatric departments of their alma mater, and others work as physicians in other regions of Russia and abroad [7].

### SCIENTIFIC PEDIATRIC SCHOOL

Scientific schools in medicine have always existed. They have brought teachers and students together through common scientific and clinical research. Pediatrics is a relatively young science when compared to, for example, surgery, internal medicine or obstetrics. And scientific research in pediatrics does not have a very long history either. What determined the emergence of scientific pediatric school in the Russian North? First of all, of course, a person — Maria Vladimirovna Pikkel, the first woman professor in the European North of Russia. Maria Vladimirovna's scientific activity began with the study of rickets and dystrophy in children in the difficult post-war years. Then there was a doctoral dissertation devoted to the problem of tuberculous meningitis in children. Prof. M.V. Pikkel by her life and professional skill managed to prove that science is impossible without medical practice. She awakened interest in pediatrics in many people; a team of like-minded people began to form around her and a pleiad of students and followers grew up. The first dissertations under the guidance of Maria Vladimirovna were defended by V.N. Koroleva, T.I. Mugandina, V.D. Novozhilova, V.A. Ternovskaya. They were different in topics, but they were united by one idea — peculiarities of child's health living in the North. The birth of the Pediatric Faculty, training of scientific personnel through postgraduate studies at the Leningrad Pediatric Institute and the 1st Moscow Medical Institute allowed the pediatric

departments of the Arkhangelsk Medical Institute (Academy, University) headed by the pupils of Prof. M.V. Pikkel (Prof. V.A. Ternovskaya, Prof. V.I. Makarova, Prof. L.V. Titova, Prof. G.N. Chumakova, Prof. E.N. Sibileva, Prof. V.A. Kudryavtsev, Prof. N.D. Shiryaev, Dr. I.A. Turabov) to strengthen and raise the next young generation of researchers, who also devote their scientific research to the study of children's health in the European North of Russia, the peculiarities of the clinical course of diseases, offer new methods of diagnosis, treatment and prevention [7].

Medical institutions, which are the bases of pediatric departments, have a full range of modern diagnostic and treatment equipment. In addition, children's outpatient clinics, preschool institutions, schools, regional and city children's homes are used for the educational process. Therapeutic work is an integral part of teachers' activity of the specialized departments. The teaching staff works in hospitals, conducts outpatient treatment. Assistants of the departments hold on-call surgeries, consultations, seminars. Professors and associate professors supervise pediatric care in the districts of the region, carry out visiting consultative work. Many of them are chief freelance specialists of the Arkhangelsk region. They actively participate in the organization of scientific-practical conferences, in the attestation work of the Ministry of Health of the region. Clinical residents are trained at the departments. Teachers of the departments give lectures and conduct classes at the Faculty of Professional Development and Professional Training of Specialists.

Scientific researches are carried out within the framework of the Russian scientific and technical programs "Health of the population of the European North" and "Children of the North", as well as several international scientific projects: the program on neuropsychopharmacology (Prof. V.A. Ternovskaya), the Barents-region program on diphtheria and vaccine prevention (Prof. L.V. Titova), the program "Decade of musculoskeletal diseases" (Prof.

V.I. Makarova, Associate Professor I.V. Babikova), the program on pediatric urology (Prof. N.D. Shiryaev, Associate Professor N.V. Markov), the program on breastfeeding (Prof. G.N. Chumakova), the program on in vitro fertilization (Prof. A.L. Zashikhin and Prof. A.L. Zashikhin and Y.V. Agafonov), the program "Bronchial asthma and allergy in children" (Prof. V.I. Makarova, Associate Professor A.K. Kopalina), the program on pediatric oncohematology (Dr. I.A. Turabov). Looking at the world map, the geography of sci-

entific presentations by pediatricians of ASMI is quite extensive: Norway, France, Canada, Austria, Turkey, Bulgaria, USA, Italy, Greece, Poland, Germany, Israel, Japan, Sweden, Holland. Many projects are still being implemented together with the leading scientific centers of Russia: National Center for Disease Control of the Russian Academy of Sciences, Moscow Institute of Pediatrics and Children's Surgery of the Ministry of Health of the Russian Federation, Institute of Rheumatology of the Russian Academy of Sciences, Institute of Nutrition of the National Center for Disease Control, Moscow Regional Research Clinical Institute named after M.F. Vladimirovsky, Moscow Research Institute of Epidemiology and Microbiology named after G.N. Gabrichevsky, Children's Research and Clinical Center of Infectious Diseases of FMBA (St. Petersburg), St. Petersburg Pediatric Medical University and others.

### MODERN HISTORY OF THE UNIVERSITY

In 1982 by the Decree of the Presidium of the Supreme Soviet of the USSR ASMI was awarded the Order of the Red Banner of Labor. The first computing center is opened in the university with the support of the most famous graduate — Academician N.M. Amosov. Prominent scientists, who graduated from the university in different years, including graduates of the war years, gathered at the solemn meeting devoted to 50th anniversary of the ASMI, among them -General Nikolai Mikhailovich Rudny (1920–1993; participant of the Great Patriotic War, chief of infirmary, senior doctor of the Normandy-Neman regiment, head of the Air Force Aviation and Space Medicine Service in 1974–1988), Colonel Ivan Ivanovich Kasyan (1920–1990; leading doctor, senior researcher of the Institute of Aviation and Space Medicine in 1961–1975), since 1975 — deputy head of the group of medical support of flights in the Central Control Center. Ivan I. Kasyan was engaged in the study of weightlessness problems, he personally participated in 420 flights on the Tu-104A laboratory airplane to study the condition and performance of humans in short-term weightlessness). It bears emphasis that many other graduates of ASMI also contributed in making the Arkhangelsk scientific medical school famous far beyond the region.

In 1991, the Faculty of Social Workers was opened in ASMI, education of foreign students began, the first dissertation council in Russia was opened to defend doctoral dissertations in the new specialty "Safety, protection, rescue and life support in emergency situations" (medical and biological sciences) and in the specialty

"Physiology" (medical sciences). In 1996, the dissertation council for the defense of dissertations in clinical specialties "Internal Medicine", "Surgery" and "Pediatrics" began its work.

In 1993 Prof. Pavel Ivanovich Sidorov was elected rector of ASMI. Active international cooperation began under his leadership including the exchange of students (Norway), creation of the Russian-German Center of Positive Psychotherapy and the Swedish-Russian Social College. A department of international cooperation is created in ASMI. In 1994 ASMI is reorganized into Arkhangelsk State Medical Academy (ASMA). The Northern Scientific Center of Russian Academy of Medical Science is organized on the basis of ASMA, the first issue of the scientific journal "Human Ecology" is published (founders of RAS and RAMS). In 1995, the Faculty of Advanced Training and Professional Retraining of Specialists was opened in ASMA, and in 1996 — doctoral studies. In 1997 the faculties of clinical (medical) psychology and medical managers (nurses with higher education) were established in ASMA. The North-West Branch of RAMS on the basis of St. Petersburg Bureau and Northern Scientific Center was organized in ASMA in 1998. The Institute of Management and the Faculty of Medicine and Preventive Medicine are opened. The Center of Information Technologies is established. ASMA is officially recognized as the center of medical science and medical education in the European North of Russia. Institutes of public health and social work, hygiene and medical ecology, psychology and psychiatry are created in the structure of the university. The Department of Economics and Management was established on the basis of the Institute of Management of ASMA.

In 2000, ASMA was reorganized into the Northern State Medical University, University Lyceum, Severodvinsk Institute of Medical Education, International Faculty of General Practitioner, Faculties of Ecology and Pharmacy, Russian-Norwegian Center of In Vitro Fertilization are established.

In 2001, the Institute of Information Technologies and the Faculty of Adaptive Physical Culture were opened in NSMU.

Institutes of Family Medicine and Clinical Physiology were established. For the first time in the history of the university, in 2002, courses of nurses of mercy were opened under the patronage of Metropolitan Tikhon of Arkhangelsk and Kholmogorsk. A year later the Society of Orthodox Physicians was formed in NSMU. In 2003 the Research Institute of Polar Medicine, the Research Institute of Marine Medicine, the Department of Pedagogy and Psychology were established

in NSMU. In 2006 the Arkhangelsk International School of Public Health started its work in NSMU, where scientists from various countries were able to teach students. In 2008 the University became a laureate of the contest "System of quality graduate training in educational institutions of professional education". In 2005, a museum complex was established in NSMU. The Society for the Study of the History of Medicine of the European North (currently named after its founder, Prof. G.S. Shchurov) was established on its basis. There had been developed the design concept of memorial classrooms. A memorial sign dedicated to the medics of the war years was installed. Within a year the named classrooms were opened in the university. In 2009 the museum of the history of medicine of the European North was opened in NSMU. It presents the chronicle of the university and the development of northern scientific schools. The museum complex of NSMU was awarded the memorable medal "70 Years of Victory in the Great Patriotic War of 1941–1945" by V.V. Putin for its active participation in patriotic education of citizens and solution of social and economic problems of veterans of the Great Patriotic War. Moreover, museum complex of NSMU was awarded with the Honorary sign "For active work on patriotic education of citizens" by the board of the Russian State Military Historical and Cultural Center under the Government of the Russian Federation, as well as with the Commemorative sign "Dervish-75" for the great contribution to the preservation and popularization of the history of allied northern convoys, as well as to patriotic education and training of citizens (youth) to serve the Fatherland.

Much attention was paid to sports training and patriotic education of future physicians.

In 1980 the national team of skiers of ASMI won the title of the champion among the teams of medical universities of the USSR. Great awards were given to skaters. Yachtsmen, swimmers, track and field athletes, weightlifters, boxers, wrestlers and other athletes were the sports pride of ASMI. Many of them became famous scientists, some of them work in the university until now. The Department of Mobilization Training and Disaster Medicine was established on the basis of the previously functioning departments of military sanitary training (1936–1949), military medical training (1949–1955), naval training (1955–1993), military and extreme medicine (1993–2009); the head of the department is Professor Y.E. Barachevsky. For the last 10–15 years, on the threshold of the 90th anniversary, new bright pages in the history of the University have been written. During this

period the WHO launched pilot project in NSMU studying the impact of global warming on human health. Several employees of the University became WHO expert-consultants. Consequently, NSMU took part in implementation of the international project (6 countries) "Lifelong Learning System for Medical School Teachers" within the framework of TEMPUS IV. General agreement on cooperation with the Faculty of Medicine of the University of Tromsø and University Hospital of Northern Norway for 2010–2013 was signed in Tromsø (Norway). In 2011 the university passed the certification of quality management system according to ISO 9001:2008 standardization. Among the significant events were the establishment of the Northern Branch of the Academy of Polar Medicine and Extreme Human Ecology, as well as the Department of Clinical Pharmacology and Pharmacotherapy (Prof. N.A. Vorobyova). The Social Faculty of Mental Health named after St. Luke (V.F. Voyno-Yasenetsky) was opened and became the first faculty of that kind in Russia. A year later a lecture hall as named after St. Luke.

In 2014, Dr. L.N. Gorbatova (Head of the Department of Pediatric Dentistry) was elected Rector of NSMU.

The recent history of the University is rich in events. In 2016. NSMU became a member of the National Arctic Scientific and Educational Consortium, which nowadays unites 38 organizations: 14 universities, 16 research centers and 8 organizations of the real sector of the economy. The Association of ASMI-ASMA-NSMU graduates was established; the new organization united over one and a half thousand members. A cooperation agreement was signed between NSMU, LLC "ExoAtlet" and the Development Corporation of the Arkhangelsk region. The project "Recognize Your Heart" was launched. Accreditation and Simulation Education Center was established. NSMU was honored with the regional public award "Heritage of the North". In March 2017. NSMU hosted participants of the Arctic Municipalities Forum — the first platform of the IV International Arctic Forum. Artur Chilingarov, State Duma deputy, Special Representative of the President of the Russian Federation for International Cooperation in the Arctic and Antarctic, took part in this Forum. In April 2017, the museum complex of NSMU was awarded a special diploma in the nomination "Defenders of the Fatherland" within the framework of the regional contest "Book of the Year -2016" for the book "Graduates of the Arkhangelsk State Medical Institute in the war years, 1941–1944". In 2018, Northern State Medical University



signed cooperation agreements with territorial funds of compulsory medical insurance, territorial bodies of the Federal Service for Supervision of Health Care (Roszdravnadzor), state authorities in the field of health protection of the Arkhangelsk and Murmansk regions, the Komi Republic and the Nenets Autonomous District within the framework of the federal project "Higher Education Institutions-Region". Information interaction between the participants of the project "University-region" is provided by the Project Office for the development of regional health care.

In 2018–2022 the Project Office organized a series of field events with the participants of the project "University-region" in order to implement federal projects "Development of the system of primary health care", "Provision of medical organizations of the health care system with qualified personnel".

In 2021 the interdepartmental project "Digital Department" was launched in order to create a professional retraining program "Digital Technologies in Healthcare". Studying this program gives students the opportunity to obtain additional qualifications. 108 students took the course on the basis of Innopolis University and started training. In 2022, under the terms of co-financing of the University and the administration of the Arkhangelsk region, a student training and experimental surgical unit will be created, which will be included in the structure of the Federal Center for Accreditation and Simulation Training. The interdepartmental student surgical association "Ligature" will continue its work on the basis of the operating unit, contributing to the development of surgical skills of students. Participation in the competition "Priority-2030" became one of the key achievements of the University. According to the results of this competition NSMU became one of 15 universities recognized as candidates for participation in the program. This allowed the university to move dynamically towards the development of the scientific component: the consortium "Arctic Medicine" was created, 22 projects were developed (10 of which have already been implemented). The additional professional program "Digital Technologies in Healthcare" was launched. In order to implement programs of academic strategic leadership "Priority-2030" and principles of state policy of the Russian Federation in the Arctic until 2035 (paragraph 266 of the Unified Action Plan) as well as to ensure national security for the period until 2035 (order of the Government of the Russian Federation on April 15, 2021 № 996-r), the creation of a federal center of Arctic medicine is envisaged.

Currently, more than 4.5 thousand students study at the university and 6 to 8 thousand doctors improve their qualification per year. Training of specialists with secondary professional education is carried out on 5 programs. Education at the university is performed at all levels of higher education: bachelor's degree, specialty, master's degree; training of personnel of higher qualification: postgraduate studies, residency. Today the university trains medical personnel for 30 regions. The educational and scientific activities of the university are focused on the problems of the Arctic and subarctic territories. The University has managed to achieve high indicators in international scientific and educational activities, which allowed to strengthen its competitive advantages. Currently, 1380 international students from 12 countries are studying at SSMU [8].

"We have passed a serious way from a medical school to a university and, undoubtedly, we can be proud of the fact that all these years the university kept the course on quality education. Speaking about the achievements, first of all, it is worth saying that they would be impossible without the teaching staff, employees of various departments — all those who worked in different years and continue to work today. It is difficult to single out the main achievements of the university, because at each stage of its development there were its own tasks and requirements. Every year the infrastructure was improved, the list of specialties and the number of students grew, the material base was strengthened," said Rector Lyubov Nikolaevna Gorbatova at the solemn meeting dedicated to the anniversary [9].

#### ADDITIONAL INFORMATION

**Author contribution.** Thereby, all authors made a substantial contribution to the conception of the study, acquisition, analysis, interpretation of data for the work, drafting and revising the article, final approval of the version to be published and agree to be accountable for all aspects of the study.

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