



THE RUSSIAN UNIVERSITY OF MEDICINE

Federal state budget
educational institution
of higher vocational
education



THE RUSSIAN UNIVERSITY OF MEDICINE IS THE FLAGSHIP
OF EDUCATION – IT HAS BEEN, IS AND WILL BE!



Oleg Yanushevich

the rector of the Russian University of
medicine, academician of the Russian
Academy of Sciences, Phd, professor,
Doctor of Medical Sciences

THE UNIVERSITY WITH A CENTURY-OLD HISTORY

The Russian University of Medicine's history originates in the 19th century, from the Moscow's first I.M. Kovarsky dental surgery school opened in 1892 and become subsequently the House of the Soviet dental care. Today University is one of leaders of medical education in Russia.

Founded in 1892



Keeping traditions,
we keep up with the
times

1st place

among medical
and pharmaceutical
universities according
to the monitoring
of the effectiveness of
universities in 2022

2nd place

among 1208 higher
education organizations
of the Russian Federation
according to the
monitoring of the
effectiveness of
universities in 2022

39th place

in the RAEX ranking
of the «100 best
universities in Russia»

EDUCATIONAL AND SCIENTIFIC POTENTIAL

The teachers of our University are Doctors of Sciences (PhD), academics and corresponding members of the Russian Academy of Science, honored scientists.

The University has modern educational buildings, clinics and laboratories on the basis of which operate seven scientific and educational institutions.

We have 140+ educational programs, 71 postgraduate programs, 63 programs for training highly qualified personnel in residency. The University offers more than 600 additional professional education programs.

SPECIALITIES

HIGHER EDUCATION

BACHELOR'S DEGREE

Economics		duration of education 4 years
Management		
Social work		
215 total students		

SPECIALTY

Medical cybernetics		duration of education 6 years
General Medicine		
Clinical psychology		duration of education 5,5 years
Dentistry		
Pharmacy		duration of education 5 years

10355 total students
(1695 foreign students)

MASTER'S DEGREE

Economics		duration of education 2 years
Social work		
65 students		



OWN CLINICAL AND RESEARCH BASES

Clinic of general medicine for 450 cots. The clinical center of "Maxillofacial, reconstructive and recovery and plastic surgery" of Clinic of A.I. Yedokimov Rosunimed is organized in 1976 and is the unique division performing medical care (including hi-tech), ambulance and emergency medical service to the adult and children's population. Hardware of the Center meets the most modern world requirements. The clinical center gives also fast emergency aid on surgical stomatology and maxillofacial surgery.

Two Dental clinics – one with 150 dental units and second with 350 dental units and a hospital which accommodates 100 people.

Simulation center. Simulation and imitating training is one of the most important components of education for students of medical schools and the practicing doctors.



TECHNO BIO MED

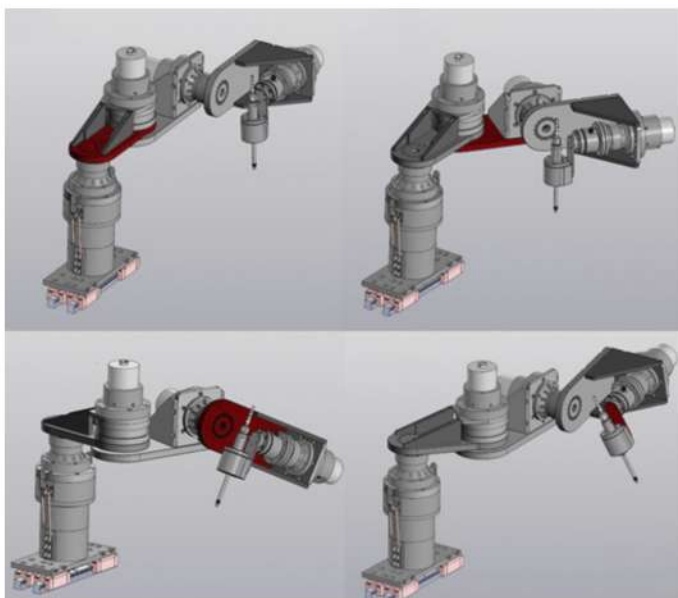
The **TECHNOBIOMED** Research Institute was established in February 2021 as part of the development of a new medical and technological scientific direction. The **TECHNOBIOMED** Research Institute consists of eight laboratories that organize their activities in the following areas: Robotic Medical technologies, Biomedical technologies, Bio-robotic technologies, Universal Technologies.



During the existence of TECHNOBIOMED, its employees have developed many unique solutions in the field of medical technology.

Expert system for improving the quality of transpedicular fixation

The project aims to integrate the components of an expert system based on a medical manipulating robot, which improves the quality of transpedicular fixation of the spine due to the intellectual component in the form of safety boundaries determined by measured force-torque characteristics.



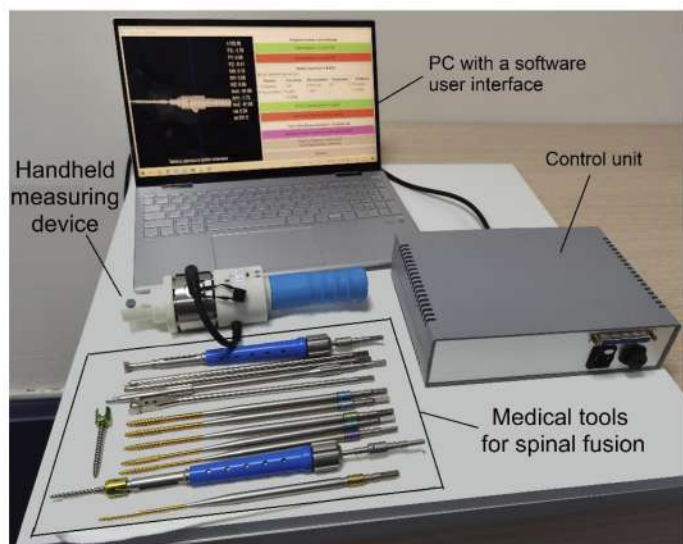
Multi-section surgical robotic table

The project is focused on creating a domestic line of dental units of various functionality to reduce the dependence of the domestic dental industry on foreign equipment and technologies.



Digital medical instruments and software package for analyzing intraoperative data

In operations for transpedicular fixation of the spine, when screwing pedicle screws of the same size into different vertebrae, the force parameters can differ by a factor of two or more. Presumably, these phenomena are strongly related to the anatomical features of the structure of bone tissue. Also, this is clearly observed in patients of different ages. Additionally, the difference in force parameters is associated with the specifically selected geometric dimensions of the pedicle screws used. Such phenomena made it possible to see the need for a deep analysis of the interaction process of medical instruments with the tissues of the patient's vertebrae. In this case, first of all, the direction of this analysis lies in finding correlations between the force, anatomical, and densitometric parameters of surgical manipulations obtained during the statistical conduct of neurosurgical operations.



Personalized photodynamic therapy of brain tumors and optimization of the process of intraoperative therapy and diagnosis of tumor boundaries

Creation of a personalized protocol for photodynamic therapy of malignant brain tumors depending on the molecular phenotype and development of methods for detecting tumor boundaries to increase the degree of resection and increase the median survival of patients.

Development of endogenous regeneration cell technology for the treatment of periodontitis

The goal is to evaluate the use of decellularized extracellular matrices (dECM) in 3D collagen hydrogel for the differentiation of dental stem cells and the possibility of using this bioengineered construct for periodontal tissue restoration.

Multi-section surgical robotic table

When operating on complex spine pathologies in neurosurgery, there is a need to change the position of the patient partially. Complexity caused by pathology, the need for repositioning, traction, or pressure on the vertebrae, and the inconvenience of instrumentation are clear reasons for moving the patient. Providing multi-sectional mobility in the surgical table that can be adjusted in a predetermined manner using a remote control makes it possible to carry out controlled movement of patient parts. This will allow the surgeon to reduce the operation's complexity and ensure the surgical result's proper quality.



Development of a technology for manufacturing nanostructured ceramic CAD/CAM blanks for dentistry

The goal is to develop a technology for manufacturing domestic CAD/CAM blanks based on zirconium oxides with controlled color and porosity and subsequent mechanical and thermal processing to create dental structures. During the project, experimental samples of CAD/CAM workpieces were made from nanostructured powder ceramic materials based on zirconium oxide.

Prototype of a mobile robotic platform for a "smart hospital"

The initial stage of using service mobile robots is the robotization of selected hospital business processes. The result of the robotization work based on business process research is creating an effective system for managing the hospital's robotic resources. Such a system will allow one to organize and control almost any auxiliary business processes that use robotic resources involved in the activities of a medical institution.



Development of a technology for manufacturing graphene-containing metal-ceramic medical materials for dentistry

The goal is to develop a technology for producing innovative graphene-ceramic materials based on aluminum and zirconium oxides by adding reinforcing biocompatible metals (Ta and Nb) synthesized by spark plasma sintering. Experimental samples of dental intraarticular pins and implants were obtained as part of the project.

Development of technologies to produce light-curing nano-filled composite materials for dentistry.

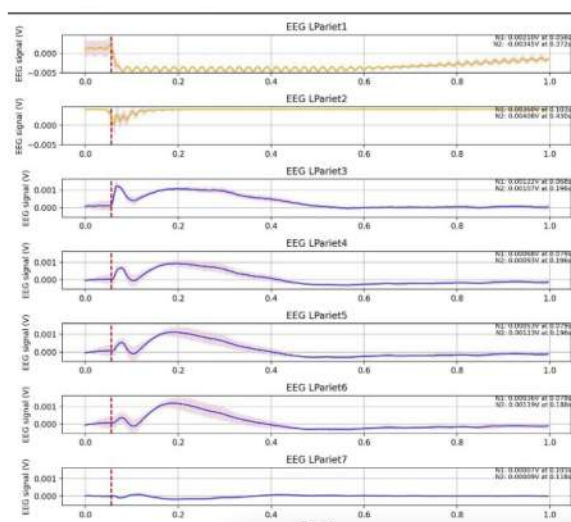
The goal is to develop a technology for producing nano-filled light-curing composites for dentistry, combining high physical and mechanical properties and aesthetic properties with various shades of color and degrees of transparency. As part of the project, experimental samples of pasty nano-filled composites used for filling cavities of various classes were obtained.



Filling dental cavities with experimental samples of composite filling materials

Development of a methodology for automated recording of cortico-cortical evoked potentials with mathematical analysis to assess the cerebral connectome in patients with drug-resistant epilepsy.

Corticocortical evoked potentials are electrical potentials produced by direct cortical stimulation. This method is used for functional “system” mapping and investigation of epileptogenicity and epileptic networks.



A digital medical-robotic platform for a “smart” operating theater

The development of digital surgical equipment creates the prerequisites for developing a technologically “smart” operating theater, which will change clinical practice in the future. A flexible software platform - a “digital twin” of the operating room, combining various equipment into a “smart operating theater” will allow us to plan operations in augmented reality and virtual environments, identify potential collisions using software simulation, and carry out robotic interventions while monitoring key parameters.



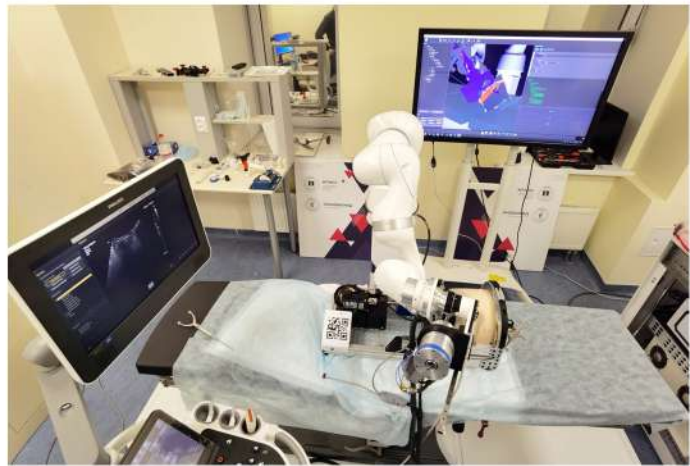
Intraoperative navigation system for a robotic surgical system for minimally invasive surgery

The project aims to develop a multimodal intraoperative navigation system based on the combination of ultrasound, stereophotogrammetric navigation, modern computer vision algorithms, and augmented reality. The system will allow automatic real-time displacement determination of target anatomical structures caused by breathing and other processes in the patient’s surgical site, increasing the accuracy of robotic systems for minimally invasive surgery.



Robot-assisted technology for automated local destruction of liver tumors

The project is intended to increase the efficiency of local treatment by automating procedures for local destruction of liver tumors based on an experimental sample of a robot-assisted system using medical navigation systems based on a unique combination of tomographic image segmentation methods, ultrasound image simulation, stereotactic navigation, as well as computer vision technologies for tracking patterns in ultrasound images.



Development of digital biomedical technologies and conducting biophysical, microbiological, morphological, and immunohistochemical studies of new bioconstructions with the study of their effect on the processes of osteoreparation and osteoregeneration

The development of nanotechnology contributes to the study of the bioactive properties of nano-dispersed cerium dioxide oxide. The main problem contributing to developing complications in the oral cavity remains the high contamination with various pathogens. The relevance of developing a new tissue-engineering design includes monodispersed spheres of cerium dioxide to stimulate targeted bone regeneration with the study of the effect on the oral microbiome and morphological genetic regeneration of bone tissue.

