

EDITOR-IN-CHIEF'S PREFACE TO ISSUE 4, 2026

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Dear colleagues!

Medicine, like any other branch of science, needs dynamics and a fresh view of facts. The experience already accumulated is like a solid foundation on which new hypotheses can be erected and theories can be built from "bricks of facts". Each new generation brings its own approach to science, which is why the work of young scientists is so important for the development of the common cause. The first autumn issue of the journal *Acta Biomedica Scientifica* is for the most part devoted to the works of young specialists from the most diverse fields of medicine. All the works were presented within the framework of the VII All-Russian Scientific and Practical Conference of Young Scientists with International Participation "FUNDAMENTAL AND APPLIED ASPECTS IN MEDICINE AND BIOLOGY", held in June of this year at the Research Centre for Family Health and Human Reproduction Problems (Irkutsk).

The first thing I would like to note is that a very large number of articles were included in the Experimental Research section. One of the most notable works is presented by a team of authors from Moscow (**Alekseeva N.A. et al.**) on the production of HER2-CAR-NK cells based on NK cell subpopulations with different expression of KIR and NKG2C receptors for the elimination of HER2+ solid tumors. NKG2C+ NK cells possessed greater sensitivity to transduction. Cultures of KIR+NKG2C+ HER2-CAR-NK cells eliminated HER2+ target cells more efficiently in a 3D model. These properties make NK cells coexpressing KIR and NKG2C a promising basis for the creation of CAR-NK effectors. Another team from Novosibirsk (**Chepeleva E.V. et al.**) assessed the biocompatibility of experimental prototypes of domestic endovascular embolizing coils made of stainless steel with polymer fibers. Silk, polypropylene, polyethylene terephthalate, and radiopaque fibers based on polyvinyl chloride with barium sulfate are promising materials for the creation of domestic embolizing coils combining hemocompatibility and functionality. The obtained results substantiate further preclinical studies, including assessment of thrombogenicity and stability of fiber fixation under conditions of simulated blood flow. Another interesting work was conducted by specialists from the Novosibirsk region, urban-type settlement Koltsovo (**Volosnikova E.A. et al.**) on the study of the squalene-based adjuvant ASV24, namely the effectiveness of enhancing the humoral immune response to various viral antigens. The obtained data allow considering ASV24 as an adjuvant for the development of subunit vaccines.

The section of morphology, physiology and pathophysiology is represented by several works: here I would like to separately note the international work of a team of authors from Moscow and Shenzhen (People's Republic of China) (**Mnatsakanyan A.O. et al.**) on Leydig cells as a potential target of a preparation based on the secretome of mesenchymal stromal cells (MSCs) in toxic damage to spermatogenesis by doxorubicin. The obtained results open prospects for the use of the MSC secretome as a therapeutic agent for restoring testicular function. The issue also includes an article outside the framework of the conference, which I would like to note as high-potential: this is the work of authors from Nizhny Novgorod (**Deryugina A.V. et al.**) on the corrective effect of nitric oxide and molecular hydrogen on the parameters of myocardial and endothelial dysfunction in the prevention of multiple organ failure in cardiac surgery patients. The extracorporeal use of NO and H₂ has proven to be an effective

strategy for correcting myocardial and endothelial dysfunction, which helps prevent the development of multiple organ failure in cardiac surgery patients.

The section of microbiology and virology includes a work that also deserves special attention from the scientific community. Specialists from Vladivostok (**Pavlenko A.P. et al.**) studied the stability of the producer strain of the analgesic peptide HCRG21. The results showed high stability of the strain's productivity level, which makes it possible to use it for the production of the analgesic peptide HCRG21.

No less interesting is the article by a team of authors from Perm (**Bayandina E.A. et al.**), describing the results of the combined effect of ethoxylated nonylphenol and copper oxide (CuO) nanoparticles on biofilms of *Rhodococcus ruber*.

Modern methods of information processing have also affected the field of obstetrics and gynecology. A team of authors from Moscow (**Bulatova I.A. et al.**) developed a model for predicting cesarean section using machine learning (Random Forest) after induction of labor. During testing, the model showed high predictive efficiency, the possibility of external validation, and clinical usefulness.

In conclusion, I would like to note the work of authors from Moscow (**Matsaeva O.D. et al.**), presented in the Laboratory Diagnostics section – on the use of convolutional neural networks for the automated classification of the life cycle stages of *Plasmodium falciparum* in blood smear microscopy. Malaria is a global public health problem, and the use of deep neural networks has shown great potential in the diagnosis and determination of the stage of development of the causative agent.

Modern methods of information processing are gradually forming an entire direction in the development of medicine, providing specialists with ever more opportunities for making accurate diagnoses and prescribing the most effective therapy. We will continue to monitor the development of this direction and share with our readers the current trends in this field.

On the pages of the journal you will also find articles on ophthalmology, surgery, cardiology, neurology and neurosurgery, and phthisiology. All the works are complex, comprehensive, and carry both theoretical and practical value. We thank all our authors and reviewers who took part in the creation of this issue, and wish further success to young specialists!

For citation: Kolesnikov S.I. Editor-in-Chief's preface to Issue 4, 2026. *Acta biomedica scientifica*. 2026; 11(4): 5-8. doi: 10.29413/ABS.2026-11.4.1