Dear Colleagues!

We are pleased to inform you that on the premises of the National Medical Research Center for Oncology at the Ministry of Health of the Russian Federation, Rostov-on-Don, Russia, preparations have been started for the next Scientific & Practical Conference on fundamental oncology with international participation, which is scheduled to be held on November 01-02, 2023, titled **FUNDAMENTAL RESEARCH IN ONCOLOGY 2023**.

As shown by the results of the last conference, organized with the full-scale support of the Directorate by the Laboratory for the Study of the Pathogenesis of Malignant Tumors at the Federal State Budgetary Institution “National Medical Research Center for Oncology” at the Ministry of Health of Russia in October 2022, with the intriguing title “Fundamental Research: STOPPER or DRIVER in Modern Oncology?”, the participants have unanimously arrived at their definitely expressed scientific consensus to highlight that there is a really rapid advancement in the experimental and applied science in oncology, an intensification of research at leading oncopathological centers in Russia and abroad! In total, about 200 experts took an active part in the work thereof, among which were full academicians and corresponding members of the Russian Academy of Sciences, professors, including 40 doctors and candidates of science. It is such a large cohort of highly qualified scientists from Moscow, Pushchino, Tomsk, Krasnoyarsk, Novosibirsk, Rostov-on-Don, Saratov, Simferopol, Minsk, Osaka and London, representing various scientific centers and cities, who joined their efforts to demonstrate the living vitality of the fundamental science and answer the main question about the relevance, timeliness and demand for fundamental research in modern oncology. It was not easy for us to keep the time schedule within the framework of 2 days of the conference work in order to manage the huge flow of information that was presented in the form of lectures and reports, and subsequently as publication of abstracts in a special issue of the journal Cardiometry.

Now, upon the kind consent by the management of the journal Cardiometry, we would like to introduce to you this upcoming scientific event and outline the main scientific issues that will be covered by the conference scheduled to be held on November 1-2, 2023. Since the time of the conference coincides with the significant date, namely, the 90th anniversary of the birth of Elena Borisovna Kvakina, known as one of the authors of the scientific discovery “Pattern of development of qualitatively differing general nonspecific adaptational reactions of the organism and their periodicity at different levels of reactivity” (Scientific Discovery Registration Certificate No. 158, 1975). In honor of the Day of Remembrance of this brilliant scientist, an outstanding female researcher, who made her invaluable contribution to the development of the mechanism for increasing antitumor resistance using transcranial electromagnetic therapy, the development of principles and technologies of activation magnetotherapy, the conference program will certainly present the report “The origins of the development of activation magnetotherapy for tumors and modern wave technologies”.

Within the framework of the upcoming conference, the topical areas in the development of the fundamental science will be addressed. First of all, major conceptual developments in oncology related to the metabolic syndrome and carcinogenesis should be offered for discussion by the scientific community. What outcome gives us the Metabolic Therapy? The most important theoretical aspects of malignant progression, such as tumor cell adhesion, circulating tumor cells, – both the fundamental and translational aspects, – dendritic cells and their role in cancer immunotherapy, molecular genetic substantiation of the tumor cell resistance and ways to overcome it, genetically modified lymphocytes with chimeric T- cell receptor: capabilities and challenges, – all this will be presented by the top researchers in the above mentioned research areas, by the star scientists from leading scientific medical research centers in Russia and abroad.

The section of experimental oncology will allow you to get acquainted with the achievements in modeling, including liver metastases, PDX models and the possibilities of their application in oncological research,
three-dimensional models for studying the chemosensitivity of breast cancer cells. Studies of the most aggressive models of the tumor growth are of constant interest. Such an object for researchers is most often melanoma, with which a new knowledge has been accumulated that will be presented considering the microRNA regulation of apoptosis in the decarbosine-resistant skin melanoma cells, the features of the growth and development of B16 melanoma in modeling post-traumatic stress disorder, and undoubtedly important for understanding the mechanism of cellular malignancy of melanoma – manifestation of the mitochondrial dysfunction. Morphological aspects of the development of melanoma and other models of tumor growth under the conditions of comorbid pathology and a new branch of biotherapy – *mitochondrial therapy* will be highlighted. One of the most promising and trendy topics in the modern science is related to mitochondria as a unique object of biological life, the role of which is associated not only with the processes of energy supply, but also with the transfer of information related to metabolic transformation, the signaling function of regulating development and programmed death of cellular systems, the dynamism of morphological mitochondrial structures, the cooperative self-organization and the intercellular translocation. The works by international scientists for the last three years show that there is an abnormality found in functioning of mitochondria in diabetes, stroke, myocardial infarction, neurodegenerative diseases, and malignant neoplasms of various localizations. At the same time, unique recovery technologies are being developed and introduced into clinical practice by training mitochondria and maintaining their biogenesis at the cellular and molecular level, using quantitatively changing oxygen and glucose delivery, which is carried out by the methods of interval hypoxic training (IHT) as a subtle mechanism for increasing adaptive margins, quality of life and longevity.

This incomplete list of scientific reports will include developments related to the search for new inhibitors of protein kinase signaling pathways using molecular dynamics and molecular docking methods, the results of combined plasmonic photothermal and photodynamic therapy of transplanted tumors in laboratory animals, as well as the molecular cellular effects produced by proton and gamma irradiation in the murine melanoma B16 model *in vivo*.

Sono-dynamic and gene therapy options are of particular importance in oncological practice. The participants of the conference will be offered some evidence data on an in-depth study of the influence of these two seemingly different approaches to target the same problem: cancer treatment. The experience shared by the Japanese corporation represented by its Chief, Dr. Inui Toshio, will be of interest both to practitioners and theorists due to its high level of modern medical technologies. It is very gratifying that at present, the successful wide use of high-tech treatment technologies for various nosological forms of cancer in applied oncology is increasing. The conference community will be supplied with reports on the molecular genetic and clinical and morphological features of ovarian cancer, the role of genetic factors in the development of clinically significant changes in the hemostasis system in onco-hematological patients. Data will be presented on studies of the acute kidney injury molecule KIM-1 during cisplatin-containing chemotherapy, IHC expression of matrix metalloproteinases in advanced ovarian cancer, the role of tumor-promoting chronic inflammation in progression of breast cancer, and assessment of extracellular matrix biomarkers in colorectal carcinoma. One of the exciting topics of the conference will be devoted to the use of dendritic cell vaccines in the treatment of cervical cancer.

Thus, even a simple run through the topics that will be discussed at the conference allows us to appreciate the significance and diversity of the semantic palette of the scientific research and development of fundamental importance for oncology and medicine in general. We kindly invite all concerned persons to participate in the conference; no matter they come from, whatever their views in science may be. We believe that only by joint efforts some new points of the growth of the fundamental science will be identified and promoted, which should be capable of approaching and solving the key problems in oncology.

*Conference Organizing Committee*

*Note*: The conference program will be available in October 2023 on the website of the National Medical Research Center for Oncology in section NEWS [https://rnioi.ru/novosti-i-sobytiya/]