According to the proposals of European Society of Medical Oncologists (ESMO), oncological studies currently are focused on the problem of cancer therapy individualization, which has to be based on the determination of individual tumor molecular profile and cellular markers, which are specific for each patient.

Over the last several years the sharp interest of researchers in the problem of tumor cell microenvironment, especially tumor hypoxia, has been observed. Tumor hypoxia is one of the most prominent features of malignant tumors, which distinguish them from benign tumors or normal tissue. According to the experimental and clinical studies tumor hypoxia largely contributes to tumor progression, and may be considered as one of the key problems in oncology. It should be mentioned that mechanisms of both hypoxia formation and hypoxia-associated events are studied now on the new post-genomic level and involve new molecular biology techniques assuring that such high priority investigations would become much more informative. Both fundamental and applied aspects of tumor hypoxia problem are studied in many universities worldwide, which provide future diagnostic and therapeutic perspectives. Furthermore, tumor hypoxia investigation was included in five-year research program (2008–2012) of National Cancer Institute (USA) as well as Seventh Research Framework Programme (FP7), theme “Health”, topic “Cancer”.

Taking into account the great interest of researchers in above-mentioned problem, several international conferences dedicated to hypoxia in malignant tumors were held during the last few years. Also, special sections on hypoxia were included in the program of different oncological scientific symposia and forums. In October 2008 tumor hypoxia problem was discussed on international scientific-applied conference “Tumor hypoxia and malignant progression”, which took place in Kiev and gathered leading foreign scientists and Ukrainian oncologists working in this field. This Conference was organized by R.E. Kavetsky Institute of Experimental Oncology, Pathology and Radiobiology of National Academy of Sciences (NAS) of Ukraine. This Conference was dedicated to the 90th Anniversary of NAS of Ukraine, and was devoted to the molecular mechanisms of hypoxia-associated signaling pathways in primary tumors as key events in tumor progression, and perspective therapeutic strategies and diagnostic methods based on tumor hypoxia status.

The stimulating effect of hypoxia on aggressive behavior and tumor progression was discussed on plenary lectures, oral and poster presentations as well as animated and extended discussion session in the concluding part of the Conference. The clinical relevance of the attempts to classify the malignant tumors according to the level of their oxygenation was suggested. Such approach may be advantageous when decision should be made about the most effective therapeutic modalities. The thorough studies of the interrelationships between metabolic and stromal microenvironment of tumor cells would contribute to understanding of the nature of malignant growth. The cross talk between tumor and stromal cells was suggested to be the background of tumor-host interaction and to determine the general outcome of the tumor process.

Meeting report will be published in the next issue of Experimental Oncology journal.

Editor-in-Chief of Experimental Oncology
V.F. Chekhun