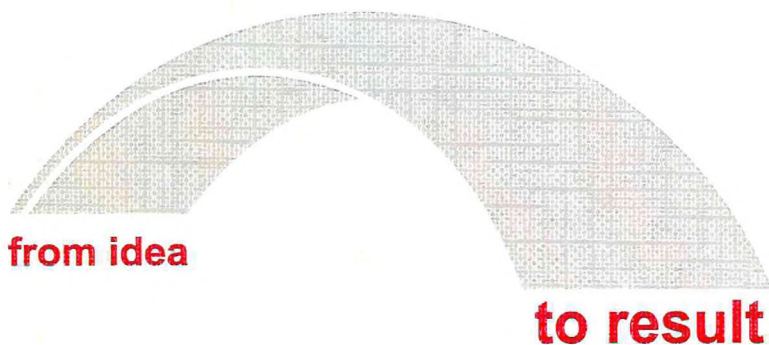


**International Conference
“Physics of Cancer:
Interdisciplinary Problems and Clinical Applications”**

Book of Abstracts

Tomsk, Russia, May 23-26, 2017



Institute of Strength Physics and Materials Science
of Siberian Branch Russian Academy of Sciences

INTERNATIONAL CONFERENCE

**Physics of cancer:
interdisciplinary problems and clinical applica-
tions**

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microenvironment we prepared DARPIn-conjugated liposomes. Liposomes are a widely used drug delivery system for small molecules and proteins, with the possibility of functionalizing the surface and thus enabling active targeting. DARPins (designed ankyrin repeat proteins) are recombinant antibody mimetics with high stability and specificity for their targets. In our work we used DARPIn 8h6, which specifically binds to cathepsin B and prepared DARPIn 8h6-conjugated liposomes.



REPETITIVELY PULSED RADIATION INDUCED DIFFERENT EFFECTS IN NORMAL AND TUMOR CELLS

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Previously we have shown that irradiation of mice with low doses of repetitively pulsed X-ray significantly inhibited tumor growth and reduced the number of metastatic colonies. Effects strongly depended on pulse repetition rate. The aim of the present work is to compare response of normal and tumor cells to pulsed radiation at low doses. Monocytes were isolated from human blood using CD14+ magnetic beads. IL6, IL1-beta and TNF-alpha were determined by ELISA. For macrophage phenotyping confocal microscopy was applied. "Sinus-150" was used for generation of pulsed X-ray radiation (absorbed dose below 0.1 Gy). Repetitively pulsed X-ray irradiation of CD14-positive cells induced differentiation of macrophage to M1 or M2 phenotype. We observed changes of cytokine secretion in irradiated cells on 3rd and 6th day. Effects depended on pulse repetition frequency. Induction of macrophage phenotype differentiation can result in strong antitumor effect of low-dose repetitively pulsed X-ray radiation.