

PLENARY PRESENTATIONS

TARGETED ANTI-CANCER TECHNOLOGIES

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Targeted delivery of active agents into tumors is one of the most promising areas of anti-cancer therapy. Despite significant advances in improving cancer treatment methods, there are no reliable universal approaches that can simultaneously eliminate the primary node and distant metastases, which are often more resistant to therapy. Along with the effectiveness of the developed drugs, the selectivity of therapeutic agent delivery to target cells plays an important role in order to reduce the overall toxic load on the body. We have proposed a number of approaches based on innovative multifunctional structures that combine highly selective elements for recognizing tumor cells and agents for accurate diagnosis and effective cancer therapy [1-3]. Key aspects of targeted multifunctional structures will be considered and various variants of targeting molecules will be compared in terms of their ability to visualize tumors. The latest trends of oncotheranostics aimed to significantly improving the effect on the tumor will be outlined. Special attention will be paid to the creation of targeted radiopharmaceuticals. An objective analysis of their advantages and disadvantages is given, solutions are proposed to reduce undesirable effects on healthy organs and tissues and improve delivery to tumors.

We introduce as well the concept of genetically encoded bioluminescence resonance energy transfer (BRET)-activated PDT, which combines an internal light source and a photosensitizer in a single genetic construct, which can be delivered to tumors seated at virtually unlimited depth and then triggered their treatment.

To improve the pharmacokinetics, extend blood residence and reduce renal uptake of small targeting agents we suggested the fusion of targeting protein with an albumin-binding domain (ABD). It prevents rapid renal excretion and high renal reabsorption resulting in better tumor targeting.

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References

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