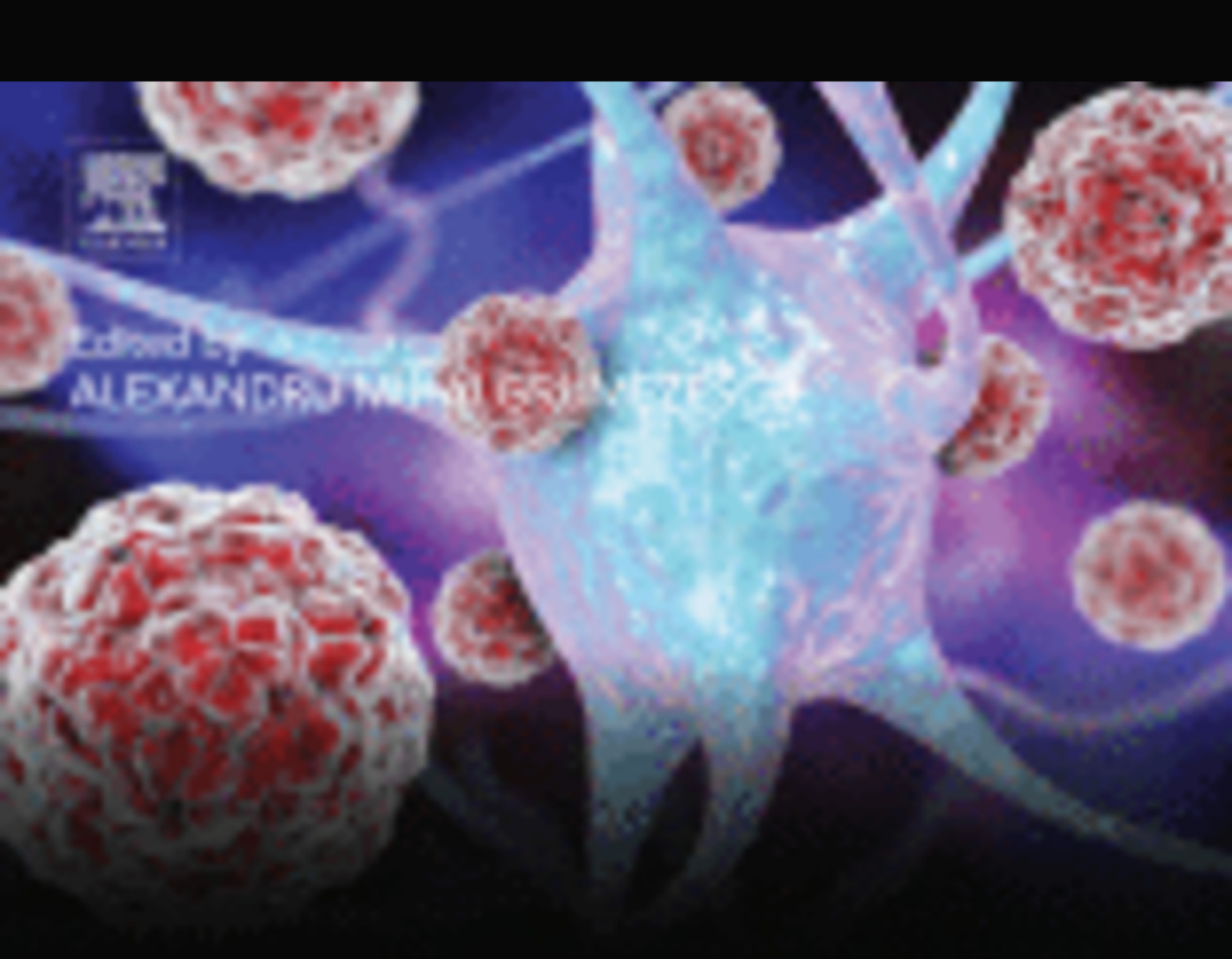




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ALEXANDRU MIHAIL GSI VEZES

MULTIFUNCTIONAL SYSTEMS FOR COMBINED DELIVERY, BIOSENSING AND DIAGNOSTICS



Multifunctional Systems for Combined Delivery, Biosensing and Diagnostics

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Chapter 9 - Application Potential of Engineered Liposomes in Tumor Targeting

Ankit Jain, Sanjay K. Jain

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Abstract

Most anticancer agents are poorly water soluble and highly potent by nature, leading to nonselective devastation of tumor, as well as normal healthy cells; this poses an obstinate challenge in safe and effective tumor chemotherapy. To get the better of this debilitating problem, liposomes have emerged as revolutionary cargoes, in last few decades, with successful rates on the rise in tumor targeting. Their extraordinary capability to carry both hydrophilic and hydrophobic bioactives in separate domains of residence and amenability to surface and compositional engineering destine this vesicular system to come true the “magic bullet concept” which was enunciated by the great biologist Paul Ehrlich. Enhanced permeability and retention effect and tumor specific ligands mediate passive targeting and active targeting to tumors, respectively. The stealth effect attributed to PEGylation in liposomes has opened up new horizons in prolonged drug delivery, and proved to be a promising tactic to solve safety issues associated with active targeting principles. Current scenarios in liposomes fabrication techniques bring forth environmentally responsive features (pH, temperature, and photosensitivity, etc.) to facilitate enhanced localization at the tumor site, in addition to targeting capabilities. This chapter sums up the drug targeting potential of the engineered liposomes, with contemporary trends in the field of liposomal research.

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Keywords

engineered liposomes; tumor targeting; PEGylation; endosomal escape; ligand

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