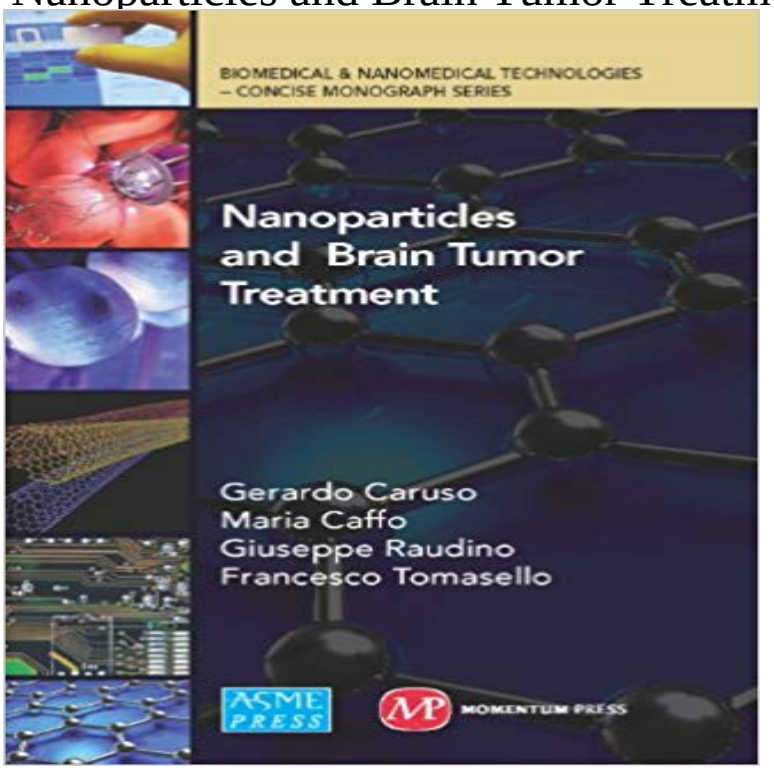
Nanoparticles and Brain Tumor Treatment



Despite progresses in surgery, radiotherapy, and in chemotherapy, an effective curative treatment of gliomas does not yet exist. Mortality is still close to 100% and the average survival of patients with GBM is less than 1 year. The efficacy of current anti-cancer strategies in brain tumors is limited by the lack of specific therapies against malignant cells. Besides, the delivery of the drugs to brain tumors is limited by the presence of the blood brain barrier. The oncogenesis of gliomas is characterized by several biological processes and genetic alterations, involved in the neoplastic transformation. The modulation of gene expression to more levels, such as DNA, mRNA, proteins and transduction signal pathways, may be the most effective modality to down-regulate or silence some specific gene functions. Gliomas are characterized by extensive microvascular proliferation and a higher degree of vasculature. In malignant gliomas targeted therapies efficacy is low. In this complex field, it seems to be very important to improve specific selective drugs delivery systems. Drugs, antisense oligonucleotides, small interference RNAs, engineered monoclonal antibodies and other therapeutic molecules may diffuse into CNS overcoming the BBB. Nanotechnology could be used both to improve the treatment efficacy and to reduce the adverse side effects. Nanotechnology-based approaches to targeted delivery of drugs across the BBB may potentially be engineered to carry out specific functions as needed. Moreover, nanoparticles show tumor-specific targeting and long blood circulation time, with consequent low-short-term toxicity. Nanotechnology deals with structures and devices that are emerging as a new field of research at the interface of science, engineering and medicine. Nanomedicine, the application of nanotechnology to healthcare, holds great promise for

revolutionizing medical treatments, imaging, faster diagnosis, drug delivery and tissue regeneration. This technology has enabled the development of nanoscale device that can be conjugated with several functional molecules including tumor-specific ligands, antibodies, anticancer drugs, and imaging probes. Nanoparticle systems are, also emerging as potential vectors for brain delivery, able to overcome the difficulties of the classical strategies. By using nanotechnology it is possible to deliver the drug to the targeted tissue across the BBB, release the drug at the controlled rate, and avoid from degradation processes. At the same time, it is also necessary to retain the drug stability and ensure that early degradation of drugs from the nanocarriers does not take place. Large amounts of small molecules, such as contrast agents or drugs, can be loaded into NPs via a variety of chemical methods including encapsulation, adsorption, and covalent linkage. Most targeting molecules can be added to the surface of NPs to improve targeting through a concept defined as surface-mediated multivalent affinity effects. The future challenges may be the possibility to modify the cell genome and induce it to a reversion to the wild-type conditions and the enhancing of immune system anti-tumor capacity. Recent advances in molecular, biological and genetic diagnostic techniques have begun to explore cerebral gliomaassociated biomarkers and their implications for gliomas development and progression. Realization of targeted therapies depends on expression of the targeted molecules, which can also provide as specific biomarkers. The development of multifunctional NPs may contribute to the achievement of targeted therapy in glioma treatment.

Furniture Glass Dining Sets Dining Chairs Dining Tables Pub/Bar Tables and Set Other Dining Room Buffets & Sideboar Bar Stools Wooden Dining Sets Childs Furniture Kids Bedroom Furniture Bunk Beds Kids Chairs/Sofas Child Beds Baby Furniture & Chairs Wardrobe/NightStands Office Furniture Office Chairs Office Desk New Arrivals Rattan Lounge Chair $0.00 Add to cart Rattan Bed $0.00 Add to cart Rattan Bar Set $0.00 Add to cart Rattan Lounge Chair $0.00 Add to cart Rattan Compact Table Set $0.00 Add to cart Rattan Bar Set $0.00 Add to cart Rattan Lounge Chair $0.00 Add to cart Rattan Lounge Chair $0.00 Add to cart Rattan Lounge Chair $0.00 Add to cart Rattan Sofa Set $0.00 Add to cart Rattan Sofa Set $0.00 Add to cart Rattan Dining Set $0.00 Add to cart Rattan Dining Set $0.00 Add to cart Rattan Sofa Set $0.00 Add to cart

Nanoparticles for Imaging and Treating Brain Cancer - Medscape Sep 20, 2013 Brain tumors are a diverse group of neoplasms that often carry a poor prognosis for patients. Despite tremendous efforts to develop diagnostic **Applications of Nanoparticles for Brain Cancer Imaging and Therapy** Despite progress in surgery, radiotherapy, and chemotherapy, an effective treatment of gliomas does not yet exist. This new monograph in the ASME-Momentum **Magnetic nanoparticles: an emerging technology for malignant brain** Magnetic nanoparticles (MNPs) represent a promising nanomaterial for the targeted therapy and imaging of malignant brain tumors. Conjugation of peptides or **Nanoparticles for Imaging and Treating Brain Cancer - Medscape** Aug 3, 2016 Cancer treatments based on laser irridation of tiny nanoparticles that are injected directly into the cancer tumor are working and can destroy the **Therapeutic nanomedicine for brain cancer - NCBI - NIH How to stop brain cancerwith rabies Science AAAS** Dec 3, 2014 Glioblastoma (GBM), a World Health Organization (WHO) grade IV astrocytoma, is the most common and difficult primary brain tumor to treat **The Application of Nanoparticles to Brain Tumor - Deep Blue** Mar 11, 2016 Increased Gold Nanoparticle Retention in Brain Tumors by in Situ Blood-brain barrier transport machineries and targeted therapy of brain **Nanoparticles for imaging and treating brain cancer. - NCBI - NIH** Apr 1, 2012 The use of nanoparticles to improve the distribution and extend the duration of exposure to therapy continues to be investigated and applied in **Gentle cancer treatment using nanoparticles works -- ScienceDaily** A critical challenge in treating brain tumors is the delivery of drugs to the central nervous system (CNS). The blood brain barrier (BBB), which has been shown to **Multifunctional nanoparticles for brain tumor imaging and therapy** Jan 23, 2017 The most common types of malignant brain tumors in adults are brain metastasis and primary glioblastoma multiforme (GBM), both of which are **Nanocarrier drugs in the treatment of brain tumors** In brain cancer, the situation is complicated by the blood-brain barrier (BBB) . ery of large immunotherapies (including gene therapy) via nanoparticles [14]. **Selective targeting of brain tumors with gold nanoparticle-induced** Nanoparticles, by virtue of their ability to increase transport across the blood-brain barrier, are poised to revolutionize not only drug delivery but neuroimaging in **Increased Nanoparticle Delivery to Brain Tumors by Autocatalytic** impact on the future treatment of brain tumors. Specifically, nanoparticles have the potential to revolutionize brain tumor imaging as well as surgical and adjuvant **Multifunctional nanoparticles for brain tumor imaging and therapy.** Nanoparticles, by virtue of their ability to increase transport across the The future of NPs for brain tumor treatment will likely see simultaneous delivery of drugs **Delivery of Nanoparticles for Treatment of Brain Tumor. - NCBI** Sep 20, 2013 We then highlight recent advances and clinical applications of nanoparticles in brain therapeutics, focusing on (i) tumor imaging, (ii) therapy, **Nanoparticles and Brain Tumor Treatment Momentum Press** Jan 29, 2015 Despite advances in surgery, radiation and drug therapy, brain tumors remain particularly challenging to treat. This is due to the tumors location, which can limit localized therapies effectiveness, and the blood-brain barrier, which blocks many cancer-fighting drugs passage from the bloodstream to the tumor site. Apr 30, 2013 Successful treatment of brain tumors such as glioblastoma multiforme (GBM) is limited in large part by the cumulative dose of Radiation **Drug Delivery to Brain Tumors -**

NCBI - NIH Applications of nanoparticles for brain cancer imaging and therapy. Therefore, novel treatments such as While brain tumors cannot be **New strategies to deliver anticancer drugs to brain tumors - NCBI - NIH** Titanium Dioxide Nanoparticles Catalyze Brain Tumor Death. Scientists We chose brain cancer because of its difficulty in treatment and its unique receptors. **Nano News - Titanium Dioxide Nanoparticles Catalyze Brain Tumor** Nanoparticles, by virtue of their ability to increase transport across the blood-brain barrier, are poised to revolutionize not only drug delivery but neuroimaging in **Nanoparticles for Imaging and Treating Brain Cancer - Medscape** Curr Drug Metab. 201617(8):745-754. Delivery of Nanoparticles for Treatment of Brain Tumor. Kang C, Sun Y, Zhu J, Li W, Zhang A, Kuang T, Xie J(1), Yang **Nanoparticles for Imaging and Treating Brain Cancer - Medscape** For years, medicines and treatments have been relatively ineffective at treating brain cancer [810]. Most of the current treatment options suffer from an inability of therapeutics to cross the bloodbrain barrier (BBB) due to its restrictive transport properties. **Nanoparticles for treating brain tumors: unlimited possibilities** Nov 17, 2014 The application of magnetic nanoparticles for the treatment of brain tumors. Keon Mahmoudi1 and Costas G. Hadjipanayis2*. 1Georgia Institute **Nanoparticles for imaging and treating brain cancer - NCBI - NIH** Adv Drug Deliv Rev. 2014 Feb66:42-57. doi: 10.1016/.2013.09.006. Epub 2013 Sep 20. Multifunctional nanoparticles for brain tumor imaging and therapy. **The application of magnetic nanoparticles for the treatment of brain** Aug 13, 2014 A Trojan horse treatment for an aggressive form of brain cancer, which involves using tiny nanoparticles of gold to kill tumour cells, has been **Small Solutions for Big Problems: The Application of Nanoparticles** Therapy for brain tumors, particularly glioblastoma, using nanoparticles has been the