

1. Record Nr.	UNINA9910635395003321
Titolo	Cancer nanotechnology / / Angela Maria Almeida de Sousa, Christiane Pienna Soares, and Marlus Chorilli, editors
Pubbl/distr/stampa	Cham, Switzerland : , : Springer, , [2023] ©2023
ISBN	3-031-17831-9
Descrizione fisica	1 online resource (386 pages)
Disciplina	616.99406
Soggetti	Cancer - Treatment - Technological innovations Nanomedicine Nanotechnology Neoplasm - therapy
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Intro -- Preface -- Contents -- Part I: Materials for Cancer Nanotechnology -- Lipid Nanocarriers for Breast Cancer Treatment -- 1 Introduction -- 2 Properties and Advantages of Lipid Nanocarriers for Breast Cancer Management -- 3 Lipid-Based Nanocarriers for Breast Cancer: Approved and Under Development -- 4 Nanocarriers for Parenteral Administration -- 4.1 Liposomes -- 4.1.1 Co-encapsulation of Drugs -- 4.1.2 Long-Circulating Liposomes -- 4.1.3 Stimulus-Responsive Liposomes -- 4.1.4 Ligand-Targeted Liposome -- 4.1.5 Liposome-Based Gene Therapy -- 4.1.6 Liposomes for Theranostics -- 4.2 Solid Lipid Nanoparticles and Nanostructured Lipid Carriers -- 4.3 Nanoemulsions and Microemulsions -- 4.4 Liquid Crystalline Phases -- 5 Nanocarriers for Oral Administration -- 5.1 Liposomes -- 5.2 Solid Lipid Nanoparticles (SLN) and Nanostructured Lipid Carriers (NLC) -- 5.3 Micro- and Nanoemulsions -- 5.4 Liquid Crystalline Nanoparticles (LCNPs) -- 6 Nanocarriers for Localized Treatment -- 6.1 Intraductal Therapy -- 6.1.1 Liposomes -- 6.1.2 Nanoemulsions -- 6.2 Topical-Transdermal Therapy -- 6.2.1 Vesicles -- 6.2.2 Micro- and Nanoemulsions -- 6.2.3 Lipid Nanoparticles -- 6.2.4 Liquid Crystalline Nanoparticles -- 6.3 Subcutaneous Delivery --

6.3.1 Microemulsions -- 6.3.2 Solid Lipid Nanoparticles -- 7  
Conclusions -- References -- Polymeric Nanocarriers in Cancer Theranostics -- 1 Introduction -- 2 Nanostructured Carriers and Cancer Treatment -- 3 Photodynamic (PDT) and Photothermal (PTT) Cancer Therapies -- 3.1 Photodynamic Therapy (PDT) -- 3.2 Photothermal Therapy (PTT) -- 4 Imaging Agents and Techniques in Cancer Theranostics -- 5 Fluorophores as Photosensitizers in Theranostics -- 6 Polymeric Nanoparticles as Nanotheranostics -- 7 Inorganic-Based Probes in Polymeric Nanoparticles for Imaging.  
8 Polymeric Nanoparticles with Organic Fluorescent Tracers and Photosensitizers -- 9 Concluding Remarks -- References -- Functionalization of Nanosystems in Cancer Treatment -- 1 Introduction -- 2 Strategies for Functionalization of Nanostructures -- 2.1 Non-covalent Functionalization -- 2.2 Covalent Functionalization -- 2.2.1 Carbodiimide Chemistry -- 2.2.2 Maleimide Chemistry -- 2.2.3 Click Chemistry -- 3 Active Targeting Strategies -- 3.1 Proteins -- 3.2 Peptides -- 3.3 Small Molecules -- 4 Conclusion and Future Perspectives -- References -- 3D Bioprinting for Cancer Models -- 1 Introduction -- 2 Tumor Microenvironment Multicellularity -- 3 Bioprinting Living and Non-living Entities for Functional Organotypic Models -- 3.1 Breast Cancer -- 3.2 Ovarian Cancer -- 3.3 Pancreatic Cancer -- 3.4 Brain Cancer -- 3.5 Hepatic Cancer -- 4 Current Limitations in 3D Bioprinting -- 5 Conclusion and Future Perspectives -- References -- Monoclonal Antibodies in Nanosystems as a Strategy for Cancer Treatment -- 1 Introduction -- 2 Monoclonal Antibodies in Cancer Therapy (mAbs) -- 2.1 Antibody Structure -- 2.2 Biotechnological Synthesis Techniques -- 2.2.1 Hybridoma -- 2.2.2 Transgenic Mouse -- 2.2.3 Phage Display -- 2.3 Engineered Therapeutic mAbs -- 2.3.1 Chimeric mAbs -- 2.3.2 Humanized mAbs -- 2.3.3 Human mAbs -- 2.3.4 Bispecific mAbs -- 2.4 Therapeutic Applications of mAbs in Cancer Therapy -- 2.4.1 Blocking Cell Signaling -- 2.4.2 Antibody-Dependent Cellular Cytotoxicity (ADCC) -- 2.4.3 Antibody-Mediated Complement-Dependent Cytotoxicity (CDC) -- 2.4.4 Cancer Immunotherapy -- 2.4.5 Antibody-Drug Conjugate (ADC) -- 3 Functionalization Strategies -- 3.1 Non-covalent Methods -- 3.1.1 Adsorption -- 3.1.2 Avidin-Biotin System -- 3.2 Covalent Bonding -- 3.2.1 Carbodiimide Chemistry -- 3.2.2 Maleimide Chemistry -- 3.2.3 Click Chemistry.  
3.2.4 Other Covalent Methodologies -- 4 Nanoparticles Functionalized with Antibodies -- 4.1 Lipid Nanoparticles -- 4.1.1 Liposomes -- 4.1.2 Solid Lipid Nanoparticles and Nanostructured Lipid Carriers -- 4.2 Polymeric Nanoparticles -- 4.3 Inorganic Nanoparticles -- 4.3.1 Iron -- 4.3.2 Gold -- 4.3.3 Silica -- 4.3.4 Quantum Dots -- 5 Conclusion -- References -- Part II: Strategies for Cancer Therapy Through Nanotechnology -- Nanotechnology to Correct Mitochondrial Disorders in Cancer Diseases -- 1 Introduction -- 2 The Mitochondrial Genome -- 2.1 Mitochondrial Genes -- 2.2 Mitochondrial Gene Mutations and Mitochondrial DNA Diseases -- 2.3 Mutations of the Mitochondrial ND1 Gene and Associated Diseases -- 2.4 Mitochondria as a Therapeutic Target in Cancer -- 3 Mitochondrial Gene Therapy -- 3.1 Mitochondrial Gene/Protein Expression and Mitochondria Targeting Using Nanotechnology -- 3.1.1 Mitochondrial Gene/Protein Expression -- 3.1.2 Mitochondrial-Targeted Delivery Systems -- 3.1.3 Mitochondria-Targeted Peptide Delivery Systems -- 3.2 Future Challenges -- References -- Chronobiology and Nanotechnology for Personalized Cancer Therapy -- 1 Mammalian Circadian Clock -- 2 Circadian Disruption and Cancer Development -- 3 Chronotherapy for Cancer Treatment -- 4 Nanotechnology Applied for Cancer

Treatment -- 5 Chronotherapy and Nanotechnology -- 6 Conclusions  
-- References -- The Function of DNA and RNA Nanovaccines  
in the Treatment of Cancer -- 1 Introduction -- 2 Vaccine in Treatment  
and Prevention -- 3 Tumor Antigen -- 4 Nanovaccines Properties --  
4.1 DNA Vaccines -- 4.2 mRNA Vaccines -- 4.3 Neoantigen-Based  
Vaccine -- 5 Nanocarrier Design and Development: Critical Points  
to Induce the Immune Response -- 6 Viruslike Particles  
as a Nanocarrier -- 7 Conclusion -- References -- Messenger RNA  
Nanovaccine in Cancer Immunotherapy -- 1 Introduction.  
2 mRNA Modification -- 2.1 5 Cap -- 2.2 UTRs -- 2.3 Poly(A) Tail --  
2.4 Nucleotide Modification -- 3 mRNA Delivery System -- 3.1  
Protamine-Based Technology -- 3.2 Polymer Carrier Technology -- 3.3  
Lipid Nanoparticle Technology (LNP) -- 3.4 Ionizable Cationic Lipid --  
3.5 Phospholipids -- 3.6 LNP Application in COVID-19 mRNA Vaccine  
-- 4 Adjuvant -- 4.1 Delivery Carriers with Self-Adjuvant Properties --  
5 Antigen Selection for mRNA Cancer Vaccine -- 6 Future Directions  
of mRNA Cancer Vaccine -- References -- Part III: Innovative  
Nanotechnologies for Cancer Diagnostic and Treatment --  
Nanoparticles for Therapy and Diagnostic Imaging Techniques  
in Cancer -- 1 Introduction -- 2 Nanoparticles for Therapy -- 2.1  
Hyperthermia -- 2.1.1 Photothermal Therapy (PTT) -- 2.1.2 Gold  
Nanoparticles Applied in Photothermal Therapy -- 2.1.3 Photothermal  
Therapy and Bone Regeneration -- 2.2 Curcumin Loaded  
in Nanoparticles as a Therapeutic Agent -- 3 Nanomaterials Applied  
in Diagnostic Imaging Techniques -- 3.1 Exploring the Intrinsic  
Properties of Rare-Earth Elements -- 3.1.1 Luminescence of Rare-Earth  
Elements -- 3.1.2 Magnetic Properties of Rare-Earth Elements -- 4  
Radiolabeled Nanoparticles for Treatment, Diagnosis, and Theranostics  
-- 4.1 Overview of Radiation in Medicine -- 4.2 Diagnosis of Cancer  
with Radiolabeled Multifunctional Nanomaterials -- 4.3 Radiolabeled  
Nanomaterials for Cancer Theranostics -- 4.4 Curcumin-Based  
Multifunctional Nanomaterials for Theranostic Purposes -- 4.5  
Radiolabeling Techniques for Nanomaterials and Future Perspectives --  
5 Summary -- References -- Polymeric Microneedle-Based Drug  
Delivery Platforms for Application in Cancer Therapy -- 1 Introduction  
-- 2 Microneedles -- 2.1 General Structure and Properties -- 2.2  
Production Techniques -- 3 Microneedles as Anticancer Vaccines -- 4  
Intratumoral Administration of Therapeutics.  
5 Limitations and Future Perspectives -- 6 Conclusions -- References  
-- Clinical Trials Involving Chemotherapy-Based Nanocarriers in Cancer  
Therapy: State of the Art and Future Directions -- 1 Introduction -- 2  
Cancer Physiology -- 3 Nanocarriers for Drug Delivery -- 3.1 Types  
of Nanoparticles -- 3.1.1 Lipid-Based Nanocarriers -- 3.1.2 Polymeric  
Nanocarriers -- 3.1.3 Inorganic Nanocarriers -- 3.2 Mechanism  
of Action of Classic Chemotherapeutic Agents -- 3.3 Marketed  
Chemotherapy-Loaded Nanoparticles for Cancer Treatment -- 3.4  
Clinical Development of Nanoparticulate Systems for Cancer Treatment  
-- 4 Challenges in Nanomedicine Clinical Translation -- 5 Conclusions  
-- References -- Index.

---