1. Record Nr. UNINA9910877145303321 Autore Malviya Rishabha Titolo Integration of Biomaterials for Gene Therapy Pubbl/distr/stampa Newark:,: John Wiley & Sons, Incorporated,, 2023 ©2023 **ISBN** 1-394-17561-2 1-394-17563-9 1-394-17562-0 Edizione [1st ed.] Descrizione fisica 1 online resource (435 pages) Altri autori (Persone) SundramSonali JainNeelam Lingua di pubblicazione Inglese **Formato** Materiale a stampa Livello bibliografico Monografia Nota di contenuto Intro -- Table of Contents -- Series Page -- Title Page -- Copyright Page -- Foreword -- Preface -- Acknowledgment -- 1 Biocompatible Hydrogels for Gene Therapy -- 1.1 Introduction -- 1.2 Hydrogels Classification -- 1.3 Fabrication of Hydrogels and Its Desirable Technical Features -- 1.4 Factors to be Tuned for Gene Encapsulation in Hydrogels -- 1.5 Recent Advances on Hydrogels for Gene Delivery --1.6 Conclusion -- References -- 2 Use of Polysaccharides -- 2.1 Introduction -- 2.2 Cross-Linking Techniques for Engineering Polysaccharides-Based Biomaterials -- 2.3 Approaches to Design Polysaccharide-Derived Biomaterials -- 2.4 Biomedical Applications of Polysaccharide-Derived Biomaterials -- 2.5 Advanced Biomaterials for Wound Dressings -- 2.6 Scaffolds for Tissue Engineering and Development of Bioinks for 3D Bioprinting -- 2.7 Recent Utilization of Polysaccharides -- 2.8 Toxicity Concerns of Polysaccharide-Derived Biomaterials -- 2.9 Preclinical and Clinical Studies on Gene Delivery Using Polysaccharide-Based Biomaterials -- 2.10 Challenges and Future Directions -- 2.11 Future Prospects -- 2.12 Conclusion --References -- 3 Polysaccharide-Based Biomaterials for Gene Delivery --

3.1 Background -- 3.2 Introduction -- 3.3 Gene Therapy -- 3.4 Gene Delivery Systems Based on Polysaccharides -- 3.5 Practical Application

of Gene Delivery Systems -- 3.6 Polysaccharide-Based Nanoparticles --3.7 DNA Delivery -- 3.8 Conclusion -- References -- 4 Hydrogel-Based Gene Therapy -- 4.1 Introduction -- 4.2 Gene Therapy -- 4.3 In Vivo Gene Therapy Using Hydrogels -- 4.4 Encapsulating Cells in Hydrogels for Gene Therapy Delivery -- 4.5 Hydrogels for Integrative Tissue Engineering and Cell Delivery -- 4.6 Biocompatible Hydrogels for Transferring Cells -- 4.7 Using Hydrogels for Gene Therapy in Tissue Engineering-Based Drug. 4.8 Human Gene Therapy that Uses Hydrogel as an Alternative Method of Delivering Genetic Material to Patients -- 4.9 Recent Advancement in Biocompatible Hydrogel -- 4.10 Applications of Hydrogel -- 4.11 Current Hydrogels in Clinical Trials -- 4.12 Conclusions -- References -- 5 Progress and Prospects for Non-Viral Gene Therapy -- 5.1 Introduction -- 5.2 Definition -- 5.3 Technology Overview for Non-Viral Gene Delivery -- 5.4 Chemical Carriers for Gene Transfer: Establishing Effective In Vivo Gene Delivery -- 5.5 Types of Gene Delivery -- 5.6 Reduction of Immunological Responses Through Alteration of Delivery Method or DNA Structure -- 5.7 To Enable Long-Lasting Gene Expression, Self-Replicating, Tissue-Specific, and Integrating Plasmid Expression Systems are Designed -- 5.8 Hybrid Vector Systems to Improve Transfection and Lessen Cytotoxicity -- 5.9 Vehicle Material -- 5.10 Further Effects -- 5.11 Challenges and Prospects -- 5.12 Conclusion -- References -- 6 Nanoparticles for Tumor Gene Therapy -- 6.1 Introduction -- 6.2 Technologies for Gene

Delivery -- 6.3 Cancer Treatment with Gene Therapy -- 6.4 Gene Therapy Using Nanotechnology -- 6.5 Challenges and Future Aspects -- References -- 7 Effective Gene Transfer with Non-Viral Vectors --

7.1 Introduction -- 7.2 System Development for Delivering Genes -- 7.3 Methods for Non-Viral Vector for Delivery of Genes -- 7.4 Delivery System -- 7.5 Current Methods for Nonviral Gene Delivery: Benefits and Drawbacks -- 7.6 Current Barriers for Non-Viral Vectors -- 7.7

Possibilities for Enhancing the Non-Viral Vector Delivery System -- 7.8 Conclusion -- 7.9 Future Relevance -- References -- 8 Utilization of Chitosan for Gene Delivery -- 8.1 Introduction -- 8.2 Cationic Polymers-Based Gene Delivery Systems -- 8.3 Chitosan and Its Derivatives in Gene Delivery Systems -- 8.4 Chitosan as Chemotherapeutic Drugs.

8.5 Conclusion -- References -- 9 Nanoparticles as Gene Vectors in Tumor Therapy -- 9.1 Introduction -- 9.2 Polymer-Based Nanocarriers: Their Technology and Recent Advances -- 9.3 Conclusions --References -- 10 Progress in Non-Viral Delivery of Nucleic Acid -- 10.1 Introduction -- 10.2 Physical Methods of Non-Viral Nucleic Acid Delivery System -- 10.3 Advantages and Disadvantages of Physical Transfection -- 10.4 Chemical Methods of Non-Viral Nucleic Acid Delivery System -- 10.5 Advantages and Disadvantages of Chemical Transfection -- 10.6 Cellular Barriers for Nucleic Acid Delivery Faced by Non-Viral Vectors -- 10.7 Challenges and Limitations of Non-Viral Nucleic Acid Delivery System -- 10.8 Conclusion -- References -- 11 The Junction of Biomaterials and Gene Therapy - Current Strategies and Future Directions -- 11.1 Introduction -- 11.2 Viral Gene Therapy --11.3 DNA Viral Vectors -- 11.4 Adeno-Associated Viral Vectors -- 11.5 Non-Viral Gene Therapy -- 11.6 Recent Advances in the Development of Gene Delivery Systems -- 11.7 Development of Gene Delivery Systems -- 11.8 Viral Vectors Based on DNA for Gene Delivery Systems -- 11.9 Viral Vectors Based on RNA for Gene Delivery Systems -- 11.10 Oncolytic Viral Vectors for Gene Delivery Systems -- 11.11 Practical Application of Gene Delivery Methods -- 11.12 Conclusion --References -- 12 Utilization of Silk for Gene Delivery -- 12.1

Introduction -- 12.2 Dimensional Structure of Silk -- 12.3 Properties of Silk -- 12.4 Extraction of Fibroin from Silk Worm -- 12.5 Fabrication of Silk in Different Therapeutics Carriers -- 12.6 Utilization of Silk for Gene Therapy -- 12.7 Properties of Silk Fibroin as Biomaterial -- 12.8 Summary of Silk-Based Formulations for Gene Delivery [33] -- 12.9 Examples of Some Delivery Approaches which Utilizes Silk as a Biomaterial for Gene Delivery.

12.10 Some Highlights of Silk Fibroin -- 12.11 Conclusion -- References -- 13 Challenges and Emerging Problems in Nanomedicine Mediated Gene Therapy -- 13.1 Introduction -- 13.2 Why Nanomedicine Over Traditional Drugs? -- 13.3 Nanomedicine for Gene Therapy -- 13.4 Complications in Nanomedicine-Mediated Gene Therapy -- 13.5 Challenges in the Clinical Translation of Nanomedicines -- 13.6 Conclusion -- References -- 14 Biomaterials-Based Vaccination in Cancer Therapy -- 14.1 Introduction -- 14.2

RNA -- 14.7 RNA-Pulsed DCs as Vaccines -- 14.8 RNA Vaccines -- 14.9 Optimization of Immunotherapy -- 14.10 Cancer Treatment Through RNA Interference -- 14.11 Conclusion -- References -- Index -- End User License Agreement.

Tumor-Associated Antigens -- 14.3 Vaccine Delivery -- 14.4 Dendritic Cells -- 14.5 In Vitro Generation of Dendritic Cells -- 14.6 Usage of