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Autore	Malviya Rishabha
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Nota di contenuto	Intro -- Foreword -- Author biographies -- Rishabha Malviya -- Deepika Yadav -- Sonali Sundram -- Seifedine Kadry -- Gurvinder Singh Virk -- About the book -- Chapter Nanorobotics: materials, design, and technology -- 1.1 Introduction -- 1.2 Nanorobot design and development -- 1.3 Nanorobots designed for a broad spectrum of healthcare uses -- 1.4 The applications of nanorobots in the field of biomedicine -- 1.4.1 Microbiology -- 1.4.2 Cancer therapy using nanorobots -- 1.4.3 Biologically inspired nanorobots -- 1.4.4 The prospects of nanorobots for use in hematology -- 1.4.5 The neurosurgical prospects of nanorobots -- 1.5 The prospects of nanorobots for use in dentistry -- 1.6 The use of nanorobots in gene therapy -- 1.7 The biocompatibility and toxicity of nanorobots -- 1.8 Conclusions -- References and further reading -- Chapter Robotics and biophysics: technology advances and challenges in organic and inorganic domains -- 2.1 Introduction -- 2.2 An introduction to the use of robots in the field of biophysics -- 2.2.1 The importance of robots in the field of biophysical research -- 2.2.2 The possible application of robots in areas of biophysical investigation -- 2.2.3 Biophysical applications of robot-based systems -- 2.3 Technology

7.6 Conclusions -- References -- Chapter Nanozyme-based nanorobots for cancer treatment applications -- 8.1 Introduction -- 8.2 Nanomedicine and nanotheranostics -- 8.3 Targeted tumor vessel infarction with nanomedicine -- 8.4 Targeted tumor drug delivery systems -- 8.4.1 Passively targeted drug delivery systems -- 8.4.2 Actively targeted medication delivery systems -- 8.5 Micro- and nanorobots -- 8.5.1 Chemically powered micro- and nanorobots. 8.5.2 External-field-powered micro- and nanorobots -- 8.5.3 Biohybrid micro- and nanorobots -- 8.6 Difficulties with cancer nanomedicines -- 8.7 Future perspectives -- 8.8 Conclusions -- References -- Chapter Progress in the bioelectrochemical and biophysical diagnostic profiling of malignant cancer cells -- 9.1 Introduction -- 9.2 The use of biosensors in clinical assessment -- 9.3 Electrochemical biosensors -- 9.3.1 Various electrochemical measurement methods -- 9.4 Conventional apoptotic and metastatic cell detection methods -- 9.5 Bioelectricity in cancer processes -- 9.5.1 Cancer and ion channels -- 9.5.2 Calcium channels -- 9.5.3 Sodium channels -- 9.5.4 Intracellular potassium channels -- 9.5.5 Chloride channels -- 9.5.6 Piezoelectric channels -- 9.6 The detection of bioelectric characteristics -- 9.7 Bioelectrical modifications -- 9.8 Electrification and extracellular vesicles -- 9.9 Biosensors for in vitro cancer cell assessment -- 9.10 Conclusions -- References and further reading -- Chapter Wireless microrobots: the next frontier in medical advancements -- 10.1 Introduction -- 10.2 Microrobots and their potential therapeutic applications -- 10.2.1 The imaging of functional capabilities for disorder diagnosis -- 10.2.2 Mobile situational awareness for disease diagnosis and health management -- 10.3 Targeted therapy -- 10.4 The applications of microrobotics in medicine, particularly in the human cardiovascular system and the bloodstream -- 10.5 Biomechanical restrictions that impede microrobots -- 10.6 Current challenges facing miniaturized biomedical robots and their potential future applications -- 10.7 Methods for the actuation and control of therapeutic microrobots -- 10.8 Conclusions -- References and further reading -- Chapter Revolutionizing cancer treatment using micro/nanorobotic devices -- 11.1 Introduction. 11.2 Nano/microrobots for drug delivery -- 11.3 Cancer-targeted drug delivery systems -- 11.3.1 Enhancing treatment precision using passive drug delivery -- 11.3.2 Enhancing treatment precision using active drug targeting -- 11.3.3 Surgical advancements with micro/nanorobotic assistance -- 11.3.4 Robotic biosensing -- 11.3.5 Enhancing drug delivery with micro/nanorobot mobility -- 11.3.6 Field-guided micro/nanorobotics -- 11.4 Conclusions and prospects -- References and further reading -- Chapter Cyborgs and cyberorgans: biosecurity in biorobotics for healthcare-a case study -- 12.1 Introduction -- 12.2 Biorobotics in healthcare -- 12.3 Cyborgs and cyberorgans in healthcare -- 12.4 Case study -- 12.5 Patent list -- 12.6 Conclusions -- References.

Sommario/riassunto

This book offers the most recent findings on employing nano/microrobots in biophysics for cancer treatment. Insightful analysis and commentary from the authors complement a comprehensive survey of recent advances and ground-breaking research in the field.