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Nota di contenuto	1. Overview on Cancer Biology and cancer hallmarks -- 2. Introduction to Seven "R"s of Radiobiology -- 3. Radiosensitivity and its contributing biologic factors -- 4. Innovative Strategies to Enhance Radiosensitivity: Hyperthermia, Nanoparticles, and DNA Repair Inhibition -- 5. Role of Tumor-Initiating Stem Cells in Tumor Resistance and Relapse -- 6. Cancer Cell's Fates upon Radiation -- 7. Overview of Radiotherapy Techniques and Modalities: Conventional and Modern Approaches -- 8. Recent Advances in Radiotherapy of Breast cancer -- Chapter 9 Advances in Radiotherapy of Gastrointestinal Cancers -- 10. Recent Advances in Radiotherapy of Lung Cancer -- 11. Advances in Radiotherapy of Genitourinary Cancers -- 12. Advances in Radiotherapy of Brain Tumors -- 13. Advances in Head and Neck Cancer -- 14. Application of radiotherapy in oligometastatic disease -- 15. Emerging

Role of FLASH Radiotherapy -- 16. Novel Approaches to Counteract Radiotherapy Toxicities: Focusing on Radioprotectors and Radiation Mitigators -- 17. Advances in Radiotherapy using Artificial Intelligence -- 18. Radiogenomics: A Potential Approach for Personalized radiotherapy. 19. The Emerging role of Microbiome in Radiation Research -- 20. Future Directions in Radiobiology and Clinical Radiation Oncology.

Sommario/riassunto

This book offers a wide perspective on the fundamental and state-of-the-art knowledge in radiobiology, radiation oncology, and the connection between both fields. Chapters incorporate basic concepts of cancer biology and radiobiology with advances in radiotherapy in cancer treatment for various types of cancer. Chapters review one or more areas of radiation oncology with topics ranging from the application of radiotherapy in various cancers, the use of advanced techniques such as FLASH radiotherapy, applications of artificial intelligence in treatment planning, and more importantly, the current and potential strategies to reduce the toxic effects of radiation. This book incorporates interdisciplinary concepts by exploring recent approaches like radiogenomics for personalizing radiotherapy and the effects of the microbiome on radiation research. Teaching the basics of radiobiology and connections between the theory and the practical aspects of radiotherapy techniques, this book is a useful reference for cancer researchers, practitioners, interdisciplinary researchers in related fields, and students in radiation oncology and radiobiology. Through this integration of strong scientific foundations and clinical applicability, this book provides future research directions and rationales for readers looking to expand their knowledge about radiation with the most recent and essential data on the subject.
