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Book Review

Nanomaterials for Cancer Therapy, 1st Edition. C. Kumar, ed., Wiley-VCH Verlag GmbH & Co., KGaA, Weinheim, Germany, 2006, Hardcover, 413 pages, ISBN: 3-527-31386-0

Cancer is the second leading cause of death worldwide. Globally an estimated 11 million new cancer cases occur each year. Cancer is caused by molecular changes that can be treated with molecular interventions. Nanotechnology enables scientists to create instrumentation on a very small scale that will make it possible to classify tumors at the molecular level, deliver treatments with precision, and predict therapeutic effectiveness (National Cancer Institute, 2008).

This book is the sixth volume in the "Nanotechnologies for the Life Sciences" book series. The book's contributors represent an international panel of cancer nanotechnology scientists. Collectively, the book's eleven chapters illustrate the application of nanomaterials in various therapeutic approaches to treating cancer. The first four chapters describe how conventional drug nanoparticles have been across several cancer treatments including chemotherapy (Chapter 1), photodynamic therapy (Chapter 2), neutron capture therapy (Chapter 3), and boron neutron capture therapy (Chapter 4). While these chapters focus on the application of nanotechnology to well-established cancer treatments, the remainder of the book emphasizes innovative approaches being investigated to treat cancer based entirely on nanotechnology. These approaches include the use of magnetic nanoparticles for local cancer therapy (Chapter 5), design of nanoparticles for controlled release of anticancer agents (Chapter 6), application of nanoparticles for thermotherapy (Chapter 8), and the use of ferromagnetic nanotubes as heat mediators for hyperthermia of solid tumors (Chapter 10). This section of the book also provides a critical analysis of these various approaches, and discusses the advantages and drawbacks of them as they apply to treating human cancers (Chapter 7). The book concludes with a chapter discussing the pros and cons of different types of polymeric nanomaterials such as liposomes (Chapter 10), and a final chapter describing how colloidal systems can be used to deliver toxic anticancer agents to treat breast cancer and multiple myeloma (Chapter 11).

Overall, this book is an excellent reference for graduate students and pharmaceutical scientists, as controlled release and targeted drug delivery are highlighted throughout the book. The book is well-written, and each chapter provides numerous examples. Although the book may not contain the more recent research in this area (there are only a handful of references after 2004), "Nanomaterials for Cancer Chemotherapy" provides the reader with a comprehensive overview of a topic that encompasses a range of disciplines including medicine, biology, chemistry, physics, and engineering.

REFERENCE

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