Frank discussions of opportunities and challenges point the way to new, more effective drug delivery systems

Interest in nanomedicine has grown tremendously, fueled by the expectation that continued research will lead to the safe, efficient, and cost-effective delivery of drugs or imaging agents to human tissues and organs. The field, however, has faced several challenges attempting to translate novel ideas into clinical benefits. With contributions from an international team of leading nanomedicine researchers, this book provides a practical assessment of the possibilities and the challenges of modern nanomedicine that will enable the development of clinically effective nanoparticulate drug delivery products and systems.

Nanoparticulate Drug Delivery Systems focuses on the rationales and preclinical evaluation of new nanoparticulate drug carriers that have yet to be thoroughly reviewed in the literature. The first chapter sets the stage with a general overview of targeted nanomedicine. The book then explores new and promising nanoparticulate drug delivery systems, including:

- Lipid nanoparticles for the delivery of nucleic acids
- Multifunctional dendritic nanocarriers
- Polymer drug nanoconjugates

Next, the book presents new opportunities and challenges for nanoparticulate drug delivery systems, including:

- Clearance of nanoparticles during circulation
• Drug delivery strategies for combatting multiple drug resistance

• Toxicological assessment of nanomedicine

Chapters offer state-of-the-technology reviews with extensive references to facilitate further investigation. Moreover, each chapter concludes with an expert assessment of remaining challenges, pointing the way to solutions and new avenues of research.

With its frank discussions of opportunities and challenges, Nanoparticulate Drug Delivery Systems sets a solid foundation for new research leading to the discovery and development of better nanomedicines.

ABOUT THE AUTHOR

YOON YEO, PhD, is Assistant Professor of Industrial and Physical Pharmacy at the College of Pharmacy at Purdue University. She also holds a joint appointment as Assistant Professor at Purdue’s Weldon School of Biomedical Engineering. Her research focuses on nanoparticle surface engineering for drug delivery to solid tumors, inhalable drug/gene delivery for cystic fibrosis therapy, and functional biomaterials based on carbohydrates. Dr. Yeo is the recipient of the NSF CAREER Award as well as New Investigator awards from both the American Association of Pharmaceutical Scientists and the American Association of Colleges of Pharmacy.

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