Nano-Oncotherapy: Advances in Nanotechnology for Cancer Diagnosis and Treatment

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We sincerely express our gratitude to all authors, researchers and contributors for their valuable efforts in the successful completion of this book, *Herbal Medicine in Cancer Therapy: Phytochemical Insights, Mechanism and Clinical Perspective*.

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We also extend our heartfelt thanks to our colleagues, students, and family members for their constant motivation and support. We hope this book will serve as a useful resource for researchers, academicians and healthcare professionals in the field of cancer therapeutics and herbal medicine.

Preface

The field of nano-oncotherapy is rapidly transforming modern cancer diagnosis and treatment through the integration of nanotechnology, precision medicine, and advanced therapeutic strategies. *Nano-oncotherapy: Advances in Nanotechnology for Cancer Diagnosis and Treatment* presents a comprehensive collection of chapters that highlight recent innovations, emerging trends, and future perspectives in nanomedicine for oncology.

This volume covers diverse aspects of nanotechnology-based cancer management, including nanoparticle-mediated drug delivery, nanostructures, quantum dots, liposomes, polymeric nanocarriers, microneedles and targeted therapeutic systems designed to improve treatment efficacy while minimizing systemic toxicity. The book also explores advanced diagnostic approaches employing nanoscale materials for early cancer detection, imaging and biomarker identification, thereby enhancing precision in cancer diagnosis and monitoring.

Special emphasis is placed on the development of smart and targeted nanocarriers capable of overcoming biological barriers, improving bioavailability and enabling controlled and site-specific drug release. Several chapters discuss the application of nanotechnology in colorectal, breast, skin and neurological cancers, demonstrating the translational potential of nano-oncotherapeutic approaches in clinical practice. In addition, the role of pharmacokinetics, pharmacodynamics and personalized medicine in optimizing nanomedicine-based therapies is critically examined.

The book further addresses current challenges associated with nano-oncotherapy, including toxicity evaluation, large-scale manufacturing, regulatory considerations, quality assurance and clinical translation. By integrating foundational concepts with cutting-edge research, this volume provides valuable insights into the evolving landscape of cancer nanotechnology and its impact on future therapeutic development.

This compilation is intended for researchers, academicians, clinicians, pharmaceutical scientists, and students seeking an in-depth understanding of nanotechnology-driven cancer therapeutics and diagnostics. We sincerely acknowledge the contributions of all authors whose expertise and dedication have made this work possible. It is our hope that *Nano-oncotherapy: Advances in Nanotechnology for Cancer Diagnosis and Treatment* will serve as a valuable scientific resource and inspire continued innovation toward more effective, safer and patient-centered cancer care.

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