# RECENT ADVANCES IN CANCER RESEARCH AND THERAPY

# 癌症研究 及其治疗的最新进展

Edited by Xin-Yuan Liu • Sidney Pestka • Yu-Fang Shi

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#### **Recent Advances in Cancer Research and Therapy**

## 癌症研究及其治疗的最新进展

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#### 内容简介

本书集全球癌症研究与治疗领域的高水平专家集体之力,全面介绍了目前癌症领域的最新研究进展。内容包括:生物治疗的研究和应用的详细描述,超级干扰素的抗癌作用;抗体治疗、免疫治疗、肿瘤干细胞研究,化学治疗的研究和应用的介绍;细胞治疗(特异性及非特异性);中药临床和三氧化砷治疗白血病;对全球发病率最高的肺癌、肠癌的研究,针对中国癌症发病率特别高的食道癌、鼻咽癌的研究等。

本书的读者对象为所有从事癌症研究与治疗的专家、研究生、大学生。

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#### **Preface**

Cancer is one of the major causes of death in developed countries as well as in metropolises of developing countries. "Recent Advances in Cancer Research and Therapy" presents a synthesis of recent advances in some key research areas of cancer research for a broad range of readers, especially for those who are interested in cancer research and the development of novel cancer therapeutic strategies.

Biotherapy for cancer is one of the major focuses of this monograph, including the following chapters: the progress in cancer biotherapy in China, the excellent therapeutic effect of a supper interferon on solid tumor patients in Chapter 21, the HecI as target for breast cancer therapeutics, the liposome-mediated target gene therapy, p53-based cancer therapy, antibody cancer research and therapy, rewiring the intracellular signaling network in cancer, the cancer stem cell, the three-dimensional tumor model and cell therapy for cancer, and the first gene therapy product Gendicine<sup>®</sup> in cancer therapy. The chapter on "Cancer Therapy Gene-Viro-Therapy" (CTGVT) describes a new therapeutic strategy combining gene therapy and oncolytic virus therapy, which has much better antitumor effect than that of respective gene therapy or oncolytic virus therapy alone.

In the cancer chemotherapy area, we gathered some well-written chapters containing comprehensive analysis of this critical subject. One chapter deals with multidrug resistance to cancer chemotherapy. Another excellent chapter entitled "Doxorubicin Cardiotoxicity Revisited: ROS versus Top2" provides a detailed review on the mechanisms of therapeutic effects of doxorubicin.

In addition, this monograph carries some special traits of Chinese cancer research, for example, the role of traditional Chinese medicine in clinical oncology and the arsenic trioxide therapy for glioma. Esophageal carcinoma is a special cancer causing half of the world's mortality in China and the Chinese morbidity of nasopharyngeal carcinoma is also very high. We have obtained very good experience in the prevention and treatment of these two kinds of cancer. Very good data were gained in China for the diagnosis and prevention of colorectal cancer. A chapter on small-cell lung cancer mainly focused on *LKB1*, a gene that modulates lung cancer differentiation and metastasis.

This monograph represents contributions of many outstanding scientists, including Dr. Sidney Pestka—The National Medal of Technology Laureate who was personally presented with the medal by President Bush—and the Academicians Wen-Hwa Lee and Eva Lee, who have more than 25 publications in *Nature, Science*, and *Cell*. Academician Mien-Chie Hung has published more than 10 papers in *Nature, Science*, and *Cell* and 13 papers in *Cancer Cell* and 7 in *Natural Cell* 

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Biology. Other well-known scientists all have made great contributions to this monograph, including Academician Leory F. Liu, Academia Sinica, Taiwan (AST), and Prof. Jian-Ting Zhang. Nine Chinese mainland academicians made great contributions to this monograph; five from the Chinese Academy of Science (CAS): Kai-xian Chen, Xin-Yuan Liu, Yu-Quan Wei, Yi-xin Zeng, and Kai-tai Yao and four from the Chinese Academy of Engineering (CAE): Yong-su Zhen, Yan Sun, Jian Ding, and Bao-Feng Yang. Besides these 13 Chinese academicians, some other scientists who are not member of CAS, CAE, or AST but may have higher merits in the cancer field also have contributed to this monograph. They are as follows: Prof. Anning Lin, our director at the Shanghai Institute of Biochemistry and Cell Biology. He is also a Chinese Thousand Talent Plan Laureate, an expert in JNK1 and NF-kβ; Prof. Xin Lu, director of Oxford Ludwig Institute, a pioneer in p53 research; Prof. Qi-Min Zhan, who serves as the deputy director of Chinese Academy of Medical Sciences; Prof. Shu Zheng, the formal principal of Zhejiang Medical University and Vice president, International Society of University Colon and Rectal Cancer Surgeons; Prof. Hua Liu, the three-dimensional cancer model innovator; Prof. Zhao-Hui Peng, the developer of the first marketed gene therapy product, Gendicine®. Contributors also include Prof. Er-Wei Song, the Chinese Chang Jiang Scholars Program Laureate with many good merits—such as his papers being published in Cell and other journals—and Prof. Hong-Bin Ji, the most promising young scientist who has had many papers published in Nature and Cancer Cell. Such a writing team consisting of so many outstanding scientists has given each chapter a better quality. Because all the writers are renowned scientists, they will certainly take responsibility for their own chapters.

Last, we would also like to express our appreciation to Senior Editorial Consultant Xiao-Zhan Gao for his contribution to the planning and coordination of the editorial work. His efforts helped expedite the progress of some stages leading to the publication of this monograph.

In summary, with all the great efforts of scientists from various fields of cancer research, we hope that we have provided an update on recent progress in some key areas of cancer research. We hope that this monograph will help our effort win the war against cancer.

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