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## Preface

We are in an exciting era in the war against cancer, with real prospects for novel anticancer drugs that are cancer cell-specific without the toxicities that have been the hallmark of conventional cytotoxic cancer chemotherapy. Advances in cancer cell biology fueled by the molecular biology revolution have resulted in the uncovering of many novel potential molecular targets for cancer therapy. New anticancer drug discovery and development is now largely focused on exploiting these new molecular targets, which encompass oncogenes, tumor suppressor genes, and their gene products, as well as targets involved in tumor angiogenesis, metastasis, survival, and longevity mechanisms. Exploitation of some of these targets has already yielded fruits and introduced new paradigms of molecularly targeted cancer therapy into the clinic, namely, protein kinase inhibition by antibodies or small molecules, exemplified by Herceptin® (trastuzumab), a humanized antibody targeted against the HER-2 growth factor receptor tyrosine kinase for the treatment of metastatic breast cancer; and Gleevec, a small molecule bcr-abl kinase inhibitor for the treatment of chronic myelogenous leukemia.

With many potential molecular targets having already been identified, and many more yet to be discovered, we face challenges in their validation, the use of relevant assays for successful drug discovery, and efficient pre-clinical and clinical development strategies to enable the translation of the discoveries into effective clinical regimens for cancer patients. To meet these challenges, novel tools in the form of basic and clinical research and testing protocols are required. In this volume on *Novel Anticancer Drug Protocols*, we have provided not only a broad overview of the whole arena of novel anticancer drug targets, but also a wide-ranging selection of cutting-edge techniques that are being applied to novel anticancer drug discovery and development. These comprise protocols involving, or applied to, growth factors, receptor/nonreceptor tyrosine kinases and their downstream signal transduction targets, serine/threonine kinases, angiogenesis, metastasis, apoptosis, cell longevity, protein chaperoning and degradation, functional genomics, antibody methods, antisense oligonucleotide strategies, protein–protein and protein–DNA interactions, and miscellaneous pertinent methods. With the exception of the introductory chapter on novel anticancer drug targets and a

review chapter on assays for in vitro and in vivo synergy, each methodological chapter begins with background information, followed by a detailed description of the experimental protocols in easy-to-follow reproducible recipes, and notes to ensure their successful use by other investigators.

We hope that *Novel Anticancer Drug Protocols* will serve its purpose of making available, in a user-friendly format, a broad range of the cutting-edge methodologies now being used in the discovery and development of novel anticancer drugs, to basic scientists and clinical researchers in academia, industry, and government laboratories, as well as cancer research institutions. Our gratitude goes to all the authors who have contributed chapters to the book.

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