Preface

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Prostate cancer is the most common non-skin malignancy in men with one in six men diagnosed within his lifetime. In 2013, there is an estimated 238,590 new cases of prostate cancer and nearly 30,000 deaths from this disease. As long as prostate cancer remains incurable, scientists and physicians will continue their fight to eradicate this highly morbid cancer. In the past decade, there has been significant innovation in prostate cancer research in the area of androgen receptor modulation, growth factor signaling pathways, tumor dormancy, immune regulation, and bone targeting pathways. These advancements have led to the exploration, development, and eventually, Food and Drug Administration (FDA) approval of several novel therapeutic agents for men with metastatic prostate cancer. Fortunately, new data generated in the laboratory are challenging the current clinical therapeutic paradigm, moving us closer to developing more effective treatment. Now, more than ever, it is essential to sustain constant translational dialogue between scientists and physicians. With new FDA-approved therapeutic options still in single digits, it is critical that we continue to advance in all areas of research including tumor metastasis, dormancy, and mechanisms of resistance.

In this special issue of *Cancer and Metastasis Reviews*, investigators in promising areas of prostate cancer research have contributed their preclinical and clinical expertise to reviewing important and timely developments in the field. Drs. Grabowska and Matusik reviewed a fundamental basic challenge in the laboratory, how to pick the best mouse model to appropriately study prostate cancer. Drs. Culig *et al.* as well as Augello and Knudsen *et al.* discussed the role of the

androgen receptor signaling in prostate cancer and metastasis, respectively. Drs. Dryhurst and Ausio reviewed the role of histone deregulation in prostate cancer, an important discussion regarding cause or effect. Drs. Bitting and Armstrong discussed the role of epithelial plasticity in prostate cancer dissemination and treatment resistance. Their proposed mechanism of tumor proliferation and resistance driven by epithelial plasticity is highlighted in the journal's cover. The issue of treatment resistance is also very important and discussed by Drs. Chang and Li in context of radiation therapy. As the disease metastasizes to bone, it is critical to further understand the role of the cancer cell and the tumor microenvironment. Drs. Chu and Chung reviewed the role of bystander cells in prostate cancer metastasis, and Drs. Cook and Lynch reviewed the complexity of the vicious cycle of prostate cancer to bone metastasis. Drs. Hardaway and Podgorski discussed the role of bone marrow fat and how adipocyte-induced inflammation is linked with skeletal metastasis. Taken all together, Drs. Camacho and Pienta reviewed a multitargeted preclinical approach to treating bone metastasis.

With the advancements of novel therapeutics in the clinic, the issue regarding sequencing and combination therapy is an important unanswered one. Drs. Mukherji and de Bono discussed both preclinical and clinical bases for sequential use of novel therapeutics. Understanding the signaling pathways have led to rational drug development. Drs. Mateo and de Bono reviewed novel drugs targeting the androgen receptor pathway. Drs. Wozney and Antonarakis discussed the relevance of growth factor and signaling pathways in prostate cancer. Drs. Varkaris and Corn reviewed the src signaling pathways and src inhibitors evaluated in the clinic. Drs. Wu and Yu discussed the role of insulin-like growth factor receptor-1 as a target for prostate cancer therapy. Drs. Suzman and Carducci reviewed the current status of bone-targeted agents in the clinic. Drs. Li and Sarkar discussed the recent progress of nutraceutical research in prostate cancer,

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especially important as nutritional supplement usage is rising worldwide and contributing the increasing costs in health care. Another emerging area of research is immunotherapy where sipuleucel-T is a first-in-class immunotherapy approved for patients with metastatic, castrate-resistant prostate cancer. Drs. Schweizer and Drake reviewed a variety of immunotherapy that will impact the clinic in the near future. Lastly, advancements of clinical agents have been accompanied with another emerging area of interest, prostate cancer biomarkers. Aptly titled as a long road to travel, Drs. Amaro and Pfeffer reviewed

the vast field of prostate cancer biomarkers. The final manuscript by Drs. Kast, Tucker, and Auner is a provocative one where novel technology known as Raman spectroscopy is explored in prostate cancer.

The thorough and stimulating discussions of the challenges in the laboratory and the clinic reviewed in this special issue continue to emphasize the fact that prostate cancer is a heterogeneous and complex disease. There is great optimism that the prostate cancer research field is evolving in the appropriate direction.