About the Editors

Tamara King

Tamara King is Assistant Professor at the University of New England, (ME, USA). She has a long-standing collaboration with Frank Porreca at the University of Arizona (AZ, USA). Her work has focused on mechanisms underlying pathological pain states, including cancer-induced bone pain. In addition, her work addresses the potential effects of prolonged treatment with currently used as well as potential novel analgesic treatments on pain, bone remodeling, and tumor growth within the bone. She serves as co-principal investigator on various NIH grants with Frank Porreca.

Frank Porreca

Frank Porreca is Professor at the University of Arizona (AZ, USA). His laboratory conducts research in the mechanisms of chronic pain and headache. His recent work has focused on affective dimensions of pain in preclinical settings as a means to enhance translation to therapy. He serves as Editor in Chief of *Life Sciences* and is the Founder and Scientific Organizer of the Spring Pain Research Conference. He also serves as Chair and Scientific Advisory Board member of numerous pharmaceutical companies developing CNS-based therapeutics.

Foreword

Analgesics for cancer pain

Tamara King & Frank Porreca

Metastatic bone pain is characterized by persistent ongoing pain that can be difficult to manage appropriately. Even if pain is adequately controlled, ongoing pain can be punctuated by periods of an episodic increase in pain intensity associated with triggering events such as movement, known as incident pain. Although current pain management techniques, generally following the WHO analgesic ladder, are efficacious in many patients when applied judiciously, there remain many patients where pain is inadequately controlled. The first chapter of this book examines the complexity of clinical cancer pain, the adverse consequences on quality of life with inadequate pain relief, and the importance of proper assessment for adequate treatment. Barriers to effective pain relief are outlined and approaches to better understanding of the therapeutic needs of the patient are examined.

Many patients report moderate-to-severe cancer pain, and are thus treated with opioid analgesics. Several options for opioid therapies are discussed across the following chapters. Chapter 2 describes use of step-2 opioid analgesics, such as codeine and tramadol, and outlines potential effects of metabolites in patient responsiveness to treatment. Chapter 3 discusses the use of opioid analgesics for severe cancer pain, including morphine, the most commonly used opioid as it is the WHO opioid of choice. The actions of metabolites and the most common side effects are discussed. Chapter 4 explores several alternative opioids for severe pain. In addition,

potential alternative routes of administration are explored. Chapter 5 covers the various adjuvant analgesics for cancer pain, addressing the diverse range of drugs that have been used. This chapter gives a brief overview of drugs used to enhance the analgesic effects of opioids by targeting complementary pain processing pathways, drugs that target opioid-resistant aspects of pain, such as neuropathic pain, and drugs that target pain arising from complications due to disease progression, such as use of bisphosphonates to target bone pain. Chapter 6 discusses the issue of breakthrough pain, outlining the definition and assessment of breakthrough cancer pain. Currently available treatment options are explored, including use of rapid-onset opioids, route of administration and appropriate dosing in patients.

Inadequate treatment of cancer pain in some patients has led to increased preclinical efforts to gain a better understanding of mechanisms driving cancer pain. Such advances will drive development of better therapeutics for cancer pain. Chapters 7 and 8 discuss ongoing research, along with emerging therapeutic options in clinical trials. Chapter 7 discusses ongoing research, with focus on potential targeting of bone metabolism for patients with cancer-induced bone pain. Chapter 8 discusses potential novel therapeutics for targeting neuroplastic changes implicated in mediating cancer-induced bone pain. In both chapters, promising molecular targets emerging from preclinical studies are discussed, with analysis of future directions in cancer pain research and drug development for better treatment of cancer pain patients. Such research is critical given the advances in disease-modifying treatments resulting in extended life expectancy of cancer patients, with cancer-induced pain becoming a chronic pain state.

Financial & competing interests disclosure

The authors have no relevant affiliations or financial involvement with any organization or entity with a financial interest in or financial conflict with the subject matter or materials discussed in the manuscript. This includes employment, consultancies, honoraria, stock ownership or options, expert testimony, grants or patents received or pending, or royalties.

No writing assistance was utilized in the production of this manuscript.