PREFACE

Several hematopoietic growth factors (HGFs) have achieved widespread clinical application. In the United States alone, more than US $5 billion per year of the health care budget is spent on these factors. The first patients were treated with recombinant human erythropoietin (rHuEPO, epoetin alfa, Epogen®) in 1985 and the first patients received recombinant methionyl human granulocyte colony-stimulating factor (r-metHuG-CSF, filgrastim, Neupogen®) or recombinant human granulocyte-macrophage colony-stimulating factor (rHuGM-CSF, sargramostim, Leukine® or Prokine®) in 1986. The first agent promoting platelet recovery was formally approved in 1997 (recombinant human interleukin-11 [rHuIL-11], oprelvekin, Neumega®). In 2002, sustained-duration derivative r-metHuG-CSF (pegfilgrastim, Neulasta®) was formally approved for clinical use. Likewise in 2002, a new erythropoietic protein (darbepoetin alfa, Aranesp®) with a longer serum half-life and increased biologic activity compared with rHuEPO was formally approved for clinical use. Pharmaceutical forms of several other agents have been assessed in clinical studies but are yet to find a widespread clinical utility or niche (e.g., stem cell factor, thrombopoietin, interleukin-3, colony-stimulating factor-1 [macrophage colony-stimulating factor]). The efficacy of the marketed agents to ameliorate the complications of cancer and the side effects of chemotherapy has led to their broad clinical application; however, their cost has led to efforts to ensure that their use is focused onto clinically appropriate indications. *Hematopoietic Growth Factors in Oncology: Basic Science and Clinical Therapeutics* is a further contribution to this endeavor.

HGFs are produced in the bone marrow, kidney, brain, and fetal liver by a wide variety of cells, and they exhibit exquisite selectivity of action dependent on the expression of specific receptors by target cells. The factors stimulate proliferation and differentiation, have antiapoptotic effects, and enhance the function of mature cells.

Hematopoietic Growth Factors in Oncology: Basic Science and Clinical Therapeutics introduces the molecular basis for the activity of HGFs and discusses their specific role in the treatment of various malignancies. The clinical application of these agents continues to expand because of their benefits and relative lack of side effects. Chemotherapy remains a mainstay of cancer treatment despite the introduction of newer therapeutic approaches, and so there remains a need to optimize chemotherapy-related supportive care. In the chapters presented from a systematic oncology perspective, we hope to help oncologists treating patients with particular tumor types to make informed evidence-based decisions about adjunctive HGF therapy within disease-focused treatment regimens. The volume also describes progress in various areas of basic science that may lead to further advances in hemopoietic cell regulation. There are also sections on the utility of growth factors in infectious disease settings such as AIDS.

Some notes about the preparation of the book are in order. Because of the nature of scientific inquiry, the editors have allowed overlap in chapter topics and varying opinions. We encouraged the authors to be comprehensive regarding the available HGFs, and we actively sought chapters covering the currently available agents. The opinions expressed

are not necessarily the opinions of the editors or the publisher. Great care has been taken to ensure the integrity of the references and drug doses, but the package inserts of any drug should always be consulted before administration.

Readers will realize that many scientists and clinicians worldwide have worked and continue to work in the fields of basic and applied research of HGFs. We would, however, like to recognize one of our colleagues, Dr. Dora M. Menchaca. Dora joined Amgen in July 1991 as a clinical manager and was a close colleague of MaryAnn Foote and George Morstyn. She was involved in the design and conduct of many clinical trials, including the use of filgrastim in the setting of acute myeloid leukemia and myelodysplastic syndromes; the use of stem cell factor in many clinical settings; the use of megakaryocyte growth and development factor for the treatment of thrombocytopenia and for harvesting peripheral blood progenitor cells; and several other molecules. Dora was an advocate for patients enrolled in clinical trials and worked diligently to help get new therapeutic molecules registered and marketed to help patients worldwide. Dora was returning on an early morning flight after a meeting with the FDA and was on American Airlines flight 77 that was hijacked and crashed into the US Pentagon on September 11, 2001. We still mourn the loss of this dedicated scientist and continue to miss her enthusiasm, her intelligence, her warm and caring personality, and her infectious smile and laughing eyes. We dedicate this book to Dora.

George Morstyn, ***MBBS, PhD, FRACP***
MaryAnn Foote, ***PhD***
Graham J. Lieschke, ***MBBS, PhD, FRACP***

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