Preface

Cancer is a global issue. While cancer risk may vary depending on location there is mounting evidence that the incidence and associated morbidity and mortality will continue to mount. This increase is in part due to an aging society, but also to the escalating incidence of obesity throughout the world. Only a small percentage of cancers are familial suggesting that environmental factors including dietary intakes are critical for determining risk and tumor behavior. The impetus to developing this volume stems from the wealth of evidence pointing to specific dietary bioactive components as modifiers of cancer-related processes. Thirty-three chapters have been assembled from world renowned experts who have conducted a systematic review of the relevant literature and provided an assessment of cancer prevention opportunities using bioactive food compounds. The tone of this text is to establish a "proof-of-principle" about the importance of nutrition and cancer prevention while realizing that space limitations may not have allowed for all areas to be adequately addressed. The text has been divided into several sections to aid in the assimilation of the materials provided. *Part I: Understanding the Role of Nutrition in Health* addresses the cancer response to bioactive food components, how "omics" approaches have been used to investigate individual variability due to genetic and epigenetic nutrient regulation of signaling proteins and associated small-molecular-weight compounds. This section defines the cellular cancer processes and molecular targets for food components and identifies those individuals who are likely to benefit by assessing the relevance of selected polymorphisms. Part II: *Role of Dietary Bioactive Components in Cancer Prevention and/or Treatment* was developed realizing that cancer risk is influenced by dietary behavior and interactions among dietary *Macroconstituents* including dietary energy balance, protein, fats, and microflora. Moreover, the effects of certain macronutrients on the cancer process may be modified by synergies with other bioactive components including *Carotenoids, Vitamins, and Minerals*, and many *Bioactive Food Components* found in fruits and vegetables, which in concert may alter the susceptibility to cancer risk. Attention was given to the fact diet may also be a vehicle for cancer-promoting substances including *Alcohol* and to the biological basis of prevention by natural bioactive compounds against certain *Dietary Xenobiotics* with cancer-promoting effects. Finally, this volume provides a forum to discuss opportunities and challenges for communicating food and health relationships to *Consumers*.

In preparing this text, efforts were directed to presenting epidemiological, clinical, and preclinical experimental evidence supporting the role of selected bioactive food components in cancer prevention or causation. Because bioactive food components are promiscuous and influence a multitude of molecular and cellular targets, particular attention was given to discussion of the mechanisms of action, review of experimental data supporting tissue-specific cancer preventative effects, and whenever available, to the totality of evidence supporting the use of specific bioactive food components for the

prevention or management of specific types of neoplasms. Areas for future nutrition and cancer research are also highlighted throughout. When possible, global recommendations are provided as general guides for use by those committed to reducing cancer burden.

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MEMORIAL

Professor Sheila Bingham, coauthor of Chapter 10 on Meats, Protein, and Cancer, was an international leader in nutritional epidemiology. She investigated the biological mechanisms underlying the effects of nutrition on health and chronic diseases, including cancer. Sadly, we acknowledge her death on 16th June 16, 2009.

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