

Preface

Epigenetics is a fascinating and rapidly expanding field of modern biology. Over the past decade, the field has witnessed a remarkable improvement in our knowledge of the importance of epigenetic events in the control of both normal cellular processes and abnormal events associated with disease. Both the scientific and medical communities now recognize that epigenetic changes lie at the heart of many complex diseases, most notably cancer.

Epigenetic events have been shown to be associated with virtually every step of tumor development and progression. They are also likely to occur very early in tumor development. The advent and rapid development of new technologies for epigenomics has started to unravel molecular features of cancer cells responsible for cancer development and progression, and to identify novel targets for diagnostics and therapeutics. Accurate measurement of various epigenetic modifications allowed us to evaluate the contribution of environmental, dietary, and lifestyle factors to human cancers. These advances have turned academic, medical, and public attention to the application of epigenetics to cancer prevention, diagnosis, and treatment.

We felt that it is important to deliver many conceptual breakthroughs and technological advances that are likely to revolutionize the traditional concept of cancer and cancer research to a broad scientific and medical community. For this book, we have invited many leading scientists, who have made important contributions to epigenetics and epigenomics and shaped the current trends in the field. We have attempted to "cover" the state-of-the-art in cancer epigenetics and cutting-edge technologies in epigenomics. Our aim was to discuss the state of science and future research needs covering the most recent advances, both conceptual and technological, and to provide novel opportunities for cancer prevention, diagnosis, and treatment. Although this book is intended primarily for academic and professional readers (from basic science to clinical researchers and epidemiologists), we believe that it will appeal to and be used by a wider audience among healthcare workers.

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