In the past decade there has been a sea change in the way disease is diagnosed and investigated due to the advent of high throughput technologies, such as microarrays, lab on a chip, proteomics, genomics, lipomics, metabolomics, etc. These advances have enabled the discovery of new and novel markers of disease relating to autoimmune disorders, cancers, endocrine diseases, genetic disorders, sensory damage, intestinal diseases etc. In many instances these developments have gone hand in hand with the discovery of biomarkers elucidated via traditional or conventional methods, such as histopathology or clinical biochemistry. Together with microprocessor-based data analysis, advanced statistics and bioinformatics these markers have been used to identify individuals with active disease or pathology as well as those who are refractory or have distinguishing pathologies. Unfortunately techniques and methods have not been readily transferable to other disease states and sometimes diagnosis still relies on single analytes rather than a cohort of markers. Furthermore, the discovery of many new markers have not been put into clinical practice, partly because of their cost and partly because some scientists are unaware of their existence or the evidence is still at the preclinical stage. In some cases the work needs further scientific scrutiny. There is thus a demand for a comprehensive and focused evidenced-based text and scientific literature that addresses these issues. Hence the formulation of *Biomarkers in Disease: Methods, Discoveries and Applications*. The series covers a wide number of areas including for example, nutrition, cancer, endocrinology, cardiology, addictions, immunology, birth defects, genetics and so on. The chapters are written by national or international experts and specialists.

**Series Titles**

1. General Methods in Biomarker Research and Their Applications
2. Biomarkers in Cancer
3. Biomarkers in Cardiovascular Disease
4. Biomarkers in Kidney Disease
5. Biomarkers in Bone Disease
6. Biomarkers in Liver Disease

More information about this series at [http://www.springer.com/series/13842](http://www.springer.com/series/13842)
Preface

In the present volume, *Biomarkers in Cancer*, we have over 40 chapters covering a wide range of conditions, body locations, and cancer types. Their allocations to a traditional grouping presents some difficulty as this may mean having only one chapter in a particular section. Instead, we have adopted a pragmatic approach for ease of navigation and so have the following sections:

- General Aspects: Techniques and Overviews
- Bladder, Kidney, Liver, and Lung
- Brain
- Breast and Prostate
- Cervix and Uterus
- Colorectum
- Head and Neck
- Leukemia and Hodgkin Lymphoma
- Further Knowledge

While the Editors recognize the difficulties in assigning particular chapters to particular sections, the book has enormously wide coverage and includes the following areas, analytes, and platforms: omics, circulating tumor cells, oncoproteomics, cardiotoxicity, DNA methylation, kallikreins, MAP17, CA 19-9, PTTG (Securin), small nuclear RNA, centrosome amplification, cytological specimens, microarrays, cell death markers, epigenetics, molecular markers, maspin, LGR5, 2D-DIGE-MS, imaging, TPS, CD133, mitosis targets, HER2, immunohistochemistry, visceral adipocytes, expression profiling, telomerase, carcinoembryonic antigen family cell adhesion molecules, human papillomavirus (HPV), the NeoMark European project, matrix metalloproteinases, tissue microarrays, FGFR4, whole blood transcriptome, nuclear BMI-1, immunophenotyping, and CD163 and TARC. Tissues and conditions include cancers in general, cancers of the bladder, renal cell, liver, lung, brain, breast, prostate, cervix, endometrium, colorectum, head and neck cancers including the oral cavity, salivary gland, oropharynx, nasopharynx, larynx, leukemia, and Hodgkin lymphoma. Finally, the last chapter is devoted to locating resource material for biomarker
discovery and applications. The chapters are written by national or international experts and specialists.

This book is specifically designed for clinical biochemists, oncologists, scientists, epidemiologists, doctors, and nurses, from students to practitioners at the higher level. It is also designed to be suitable for lecturers and teachers in health care and libraries as a reference guide.

April 2015
London

Victor R. Preedy
Vinood B. Patel
In the past decade, there has been a sea change in the way disease is diagnosed and investigated due to the advent of high-throughput technologies and advances in chemistry and physics, leading to the development of microarrays, lab on a chip, proteomics, genomics, lipomics, metabolomics, etc. These advances have enabled the discovery of new and novel markers of disease relating to autoimmune disorders, cancers, endocrine diseases, genetic disorders, sensory damage, intestinal diseases, and many other conditions too numerous to list here. In many instances, these developments have gone hand in hand with the discovery of biomarkers elucidated via traditional or conventional methods, such as histopathology, immunoassays, or clinical biochemistry. Together with microprocessor-based data analysis, advanced statistics, and bioinformatics, these markers have been used to identify individuals with active disease as well as those who are refractory or have distinguishing pathologies.

Unfortunately, techniques and methods have not been readily transferable to other disease states, and sometimes, diagnosis still relies on a single analyte rather than a cohort of markers. Furthermore, the discovery of many new markers has not been put into clinical practice partly because of their cost and partly because some scientists are unaware of their existence or the evidence is still at the preclinical stage. There is thus a demand for a comprehensive and focused evidence-based text and scientific literature that addresses these issues. Hence, the book series *Biomarkers in Disease: Methods, Discoveries and Applications*. It imparts holistic information on the scientific basis of health and biomarkers and covers the latest knowledge, trends, and treatments. It links conventional approaches with new platforms. The ability to transcend the intellectual divide is aided by the fact that each chapter has

- *Key Facts* (areas of focus explained for the lay person)
- *Definitions of Words and Terms*
- *Potential Applications to Prognosis, Other Diseases, or Conditions*
- *Summary Points*

The material in *Potential Applications to Prognosis, Other Diseases, or Conditions* pertains to speculative or proposed areas of research, cross-transference to
other diseases or stages of the disease, translational issues, and other areas of wide applicability.

The series is expected to prove useful for clinicians, scientists, epidemiologists, doctors and nurses, and also academicians and students at an advanced level.

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