

Preface

This book is an overview of the state of the art of biomarkers. A biomarker is a characteristic that can be objectively measured and evaluated as an indicator of a physiological as well as a pathological process or response to a therapeutic intervention. Although there is nothing new about biomarkers such as glucose for diabetes and blood pressure for hypertension, the current focus is on molecular biomarkers, which have taken the center stage in the development of molecular medicine. Molecular diagnostic technologies have enabled the discovery of molecular biomarkers and are helping in the definition of their role in the pathomechanism of disease. Biomarkers form the basis of development of diagnostic assays as well as targets for drug discovery. Effect of drugs, in clinical trials as well as in practice, can be monitored by biomarker assays.

There is a tremendous amount of literature on biomarkers, but there is no comprehensive source of information on the topic. Of the thousands of biomarkers that are being discovered, relatively few are being validated for further applications, and it is difficult to evaluate the potential of a biomarker. This book describes different types of biomarkers and their discovery using various “-omics” technologies such as proteomics and metabolomics along with the background information for evaluations of biomarkers as well as the procedures for their validation and use in clinical trials. Biomarkers are first described according to technologies and then according to various diseases. An important feature is the correlation between diseases and classifications of biomarkers, which provides the reader with a guide to sort out current and future biomarkers.

This book would be an important source of information on biomarkers for scientists as well as physicians and those involved in drug discovery and development. Many of the regulatory issues concerning biomarkers are related to proteomics, molecular diagnostics, and pharmacogenomics/pharmacogenetics. By facilitating the combination of therapeutics with diagnostics, biomarkers will play an important role in the development of personalized medicine, which is an important emerging trend in health care.

Kewal K. Jain, MD
Basel, Switzerland



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Jain, K.K.

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