

# Preface

Today more than ever, we recognize that breast cancer is a collection of many unique diseases with some common features. Advances in technologies have allowed researchers to simultaneously study alterations in thousands of genes or gene products that may be present in small amounts of tissue or in blood. Alterations in individual or multiple genes or gene products represent biomarkers that indicate ultimate outcomes (prognostic) or responses to treatment (predictive). Understanding how to apply biomarkers in clinical settings requires a rigorous developmental process. Validated biomarkers may represent distinct characteristics that indicate differential outcomes and that could influence treatment recommendations for individual patients.

This volume represents a collection of chapters centered on standard and emerging biomarkers in the continuum of breast cancer. Distinguished authors review markers of risk, markers of chemoprevention, markers that predict response to standard therapy such as endocrine agents or anti-HER2 agents, and markers capable of influencing treatment decisions that include pharmacogenetics, metabolomics, tumor heterogeneity, circulating tumor cells, and circulating DNA. The authors are all experts in their respective fields and, in this volume, they provide not only a review of the current status of the biomarker, but also their own perspectives on how biomarkers may be used in treatment and in future research directions. New technologies coupled with novel clinical-trial designs will allow us to advance the science of biomarker discovery and validation in a manner that is as rigorous as the process for developing and approving new medicines.

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