Contents

Preface .................................................................................................................................v
Contributors .....................................................................................................................xi

PART I PREPARATION OF CELL AND TISSUE SAMPLES
1. Breast Tissue Banking: Collection, Handling, Storage, and Release of Tissue for Breast Cancer Research ............................ 3
   Linda Snell and Peter H. Watson
2. Frozen Biopsy Collection and Storage: Frozen Biopsy Samples .......... 25
   Russell Leek
3. Serial Biopsies/Fine-Needle Aspirates and Their Assessment .......... 29
   Irene Boeddinghaus and Stephen R. D. Johnson
4. Breast Tissue Microarrays ........................................................................ 43
   Robert J. Springall and Cheryl E. Gillett
5. Preparation of Tumor Homogenates for Subsequent Preparation of Cytosols, Membrane Fractions, RNA, and DNA ............... 51
   Naomi Robertson and Russell Leek
6. Isolation of RNA From Tumor Samples: Single-Step Guanidinium Acid–Phenol Method .......................................................... 55
   Naomi Robertson and Russell Leek
7. Isolation of DNA From Tumor Samples ...................................................... 61
   Naomi Robertson and Russell Leek
8. Laser-Assisted Microdissection and Isolation of DNA and RNA .......... 65
   Ulrich Lehmann and Hans Kreipe

PART II MARKERS OF CLINICAL OUTCOME AND PROGNOSIS
9. Traditional and Established Indicators of Prognosis and Treatment Success ............................................................. 79
   Derek E. Roskell and Ian D. Buley
10. Sentinel Lymph Node Biopsy in Breast Cancer ................................. 91
    Celia Chao and Kelly M. McMasters
11. Pathological Evaluation of Axillary Sentinel Lymph Nodes in Breast Cancer ................................................................. 113
    Michael Z. Gilcrease and Aysegul Sahin

vii
Contents

12. Measurement of Estrogen Receptor Status by Immunocytochemistry in Paraffin Wax Sections .............................................................. 127

13. Markers of Apoptosis ........................................................................... 147
   Fazlul H. Sarkar and Yiwei Li

14. Quantitative Angiogenesis in Breast Cancer ...................................... 161
   Stephen B. Fox

PART III ANALYSIS OF TUMOR-DERIVED PROTEINS AND ANTIGENS
15. Immunohistochemistry ....................................................................... 191
   Cheryl E. Gillett

16. Detection of Aberrant Glycosylation in Breast Cancer
   Using Lectin Histochemistry ............................................................... 201
   Tracey M. Carter and Susan A. Brooks

17. SDS-PAGE and Western Blotting to Detect Proteins
   and Glycoproteins of Interest in Breast Cancer Research .................. 217
   Chloe Osborne and Susan A. Brooks

18. Breast Cancer Proteomics Using Two-Dimensional Electrophoresis:
   Studying the Breast Cancer Proteome .............................................. 231
   Miriam V. Dwek and Sarah L. Rawlings

19. Procedures for the Quantitative Protein Determination
   of Urokinase and Its Inhibitor, PAI-1, in Human Breast Cancer
   Tissue Extracts by ELISA .................................................................. 245
   Manfred Schmitt, Alexandra S. Sturmheit, Anita Welk, Christel Schnelldorfer, and Nadia Harbeck

PART IV ANALYSIS OF GENES AND GENE EXPRESSION IN TUMOR SPECIMENS
20. Fluorescence In Situ Hybridization and Comparative Genomic
    Hybridization ................................................................................. 269
    Patricia Gorman and Rebecca Roylance

21. Fluorescence In Situ Hybridization Assessment of c-myc Gene
    Amplification in Breast Tumor Tissues .......................................... 297
    Jan K. Blancato, Mary Steele Williams, and Robert B. Dickson

22. Detection of HER2 Gene Amplification by Fluorescence In Situ
    Hybridization in Breast Cancer ...................................................... 309
    John M. S. Bartlett and Amanda Forsyth

23. In Situ Hybridization Combined With Immunohistochemistry
    to Localize Gene Expression ......................................................... 323
    Rosemary Jeffery, Toby Hunt, and Richard Poulson
Contents

24. Quantitation of RNA by Ribonuclease Protection Assay ...................... 347
   John W. Moore

25. Identification of Steroid Hormone-Regulated Genes
    in Breast Cancer ........................................................................... 363
   Bruce R. Westley and Felicity E. B. May

26. Sequencing of the Tumor Suppressor Gene TP 53 ............................. 389
   Barbro Linderholm, Torbjörn Norberg, and Jonas Bergh

27. Expression Profiling Using cDNA Microarrays ................................. 403
   Chris Jones, Peter Simpson, Alan Mackay, and Sunil R. Lakhani

28. Gene Expression Analysis Using Filter cDNA Microarrays .................. 415
   Peter Simpson, Chris Jones, Alan Mackay, and Sunil R. Lakhani

PART V STUDYING CANCER CELL BEHAVIOR IN VITRO AND IN VIVO

29. Methods to Analyze the Effects of the Urokinase System
    on Cancer Cell Adhesion, Proliferation, Migration, and Signa
    l Transduction Events .................................................................. 427
   Ute Reuning, Manfred Schmitt, Birgit Luber, Veronika Beck, and
   Viktor Magdolen

30. Phospho-Specific Antibodies as a Tool to Study In Vivo Regulation
    of BRCA1 After DNA Damage ....................................................... 441
   Kum Kum Khandia, Magtouf Gatei, and Gordon Tribbick

31. Models of Hormone Resistance In Vitro and In Vivo ......................... 453
   Jennifer MacGregor Schafer and V. Craig Jordan

32. Generation of Genetically Modified Embryonic Stem Cells
    for the Development of Knockout Mouse Animal Model Systems ....... 465
   Stephen D. Robinson, Stephen Wilson, and Kairbaan M. Hodivala-Dilke

33. In Vivo Xenograft Models of Breast Cancer Metastasis ..................... 479
   Ursula Valentiner, Susan A. Brooks, and Udo Schumacher

34. Neoadjuvant Endocrine Therapy Models ...................................... 489
   Juliette Murray, Willia R. Miller, and J. Michael Dixon

35. Primary Mouse Endothelial Cell Culture for Assays of Angiogenesis... 503
   Louise E. Reynolds and Kairbaan M. Hodivala-Dilke

Index ............................................................................................................ 511
Breast Cancer Research Protocols
Brooks, S.A.; Harris, A. (Eds.)
2006, XIV, 518 p., Hardcover
A product of Humana Press