

Contents

<i>Preface</i>	v
<i>Contributors</i>	ix

PART I LIVE – CELL IMAGING OF THE CYTOSKELETON

1 High Resolution Multimode Light Microscopy of Cell Migration: Long-Term Imaging and Analysis	3
<i>Torsten Wöllert and George M. Langford</i>	
2 Imaging the Cytoskeleton in Live <i>Xenopus laevis</i> Embryos	23
<i>Sarah Woolner, Ann L. Miller, and William M. Bement</i>	
3 Live-Cell Imaging of the Cytoskeleton and Mitochondria–Cytoskeleton Interactions in Budding Yeast	41
<i>Theresa C. Swayne, Thomas G. Lipkin, and Liza A. Pon</i>	

PART II DYNAMICS OF ACTIN FILAMENTS AND MICROTUBULES

4 Jasplakinolide: An Actin-Specific Reagent that Promotes Actin Polymerization	71
<i>Andreas Holzinger</i>	
5 Analysis of Centrosome Function and Microtubule Dynamics by Time-Lapse Microscopy in <i>Xenopus</i> Egg Extracts.	89
<i>Christiane Wiese, Jonathan R. Mayers, and Alison J. Albee</i>	

PART III FLUORESCENCE MICROSCOPY PROTOCOLS FOR INVESTIGATING CYTOSKELETON COMPONENTS

6 Quantitative Fluorescence Microscopy Techniques	117
<i>Alessandro Esposito, Simon Schlachter, Gabriele S. Kaminski Schierle, Alan D. Elder, Alberto Diaspro, Fred S. Wouters, Clemens F. Kaminski, and Asparouh I. Iliev</i>	
7 A FRET-Based Approach for Studying Conformational Changes of a Cytoskeleton-Related Tumor Suppressor Molecule.	143
<i>Robert F. Hennigan, Mary F. Chaiken, Lauren A. Foster, and Wallace Ip</i>	
8 Sample Preparation for Fluorescence Imaging of the Cytoskeleton in Fixed and Living Plant Roots	157
<i>Julia Dyachok, Cheol-Min Yoo, Karuppaiah Palanichelvam, and Elison B. Blancaflor</i>	
9 Imaging of the Cytoskeleton and Mitochondria in Fixed Budding Yeast Cells	171
<i>Theresa C. Swayne, Istvan R. Boldogh, and Liza A. Pon</i>	

PART IV ELECTRON MICROSCOPY PROTOCOLS FOR IMAGING THE CYTOSKELETON

- 10 Imaging Cytoskeleton Components by Electron Microscopy 187
Tatyana Svitkina
- 11 Purification and Localization of Intraflagellar Transport
Particles and Polypeptides 207
Roger D. Sloboda
- 12 High Pressure Freezing, Electron Microscopy, and Immuno-Electron
Microscopy of *Tetrahymena thermophila* Basal Bodies 227
Janet B. Meehl, Thomas H. Giddings, Jr., and Mark Winey
- 13 Strategies for Imaging Microtubules in Plant Cells 243
Andreas Holzinger, Eiko Kawamura, and Geoffrey O. Wasteneys

PART V ANALYSIS OF CELL AND ORGANELLE MOTILITY

- 14 A Rapid Tracking Method for the Quantitative Analysis of Organelle
Streaming Velocity 265
Carola Luise Holweg
- 15 Melanosome Motility in Fish Retinal Pigment Epithelial Cells 275
Christina King-Smith
- 16 Analysis of Properties of Cilia Using *Tetrahymena thermophila* 283
*Vidyalakshmi Rajagopalan, Elizabeth O. Corpuz, Mark J. Hubenschmidt,
Caroline R. Townsend, David J. Asai, and David E. Wilkes*
- 17 Application of Cell Traction Force Microscopy for Cell Biology Research 301
James H-C. Wang and Bin Li
- 18 2D and 3D Quantitative Analysis of Cell Motility and Cytoskeletal Dynamics 315
Deborah Wessels, Spencer Kuhl, and David R. Soll
- 19 Detergent-Extracted Models for the Study of Cilia or Flagella 337
Charles B. Lindemann and Kathleen A. Lesich

PART VI: GENETIC AND PROTEOMICS APPROACHES FOR CYTOSKELETON PROTEIN FUNCTION

- 20 The Analysis of Intermediate Filament Dynamics Using Transfections
and Cell Fusions 357
Jesús M. Paramio
- 21 Functional Analysis of Actin-Binding Proteins in the Central Nervous
System of *Drosophila* 367
Qi He
- 22 Proteomic Tools for the Analysis of Cytoskeleton Proteins 375
Ewa Wywiał, Vishnubhat Nataraj Dongre, and Shaneen M. Singh
- Index* 389