

# Contents

- 1 Responses of Cells to Adhesion-Mediated Signals:  
A Universal Mechanism**..... 1  
Andrew D. Rape, Wei-Hui Guo, and Yu-Li Wang
- 2 Substrate Elasticity as a Probe to Measure Mechanosensing  
at Cell-Cell and Cell-Matrix Junctions** ..... 11  
Jessamine P. Winer, Anant Chopra, J. Yasha Kresh,  
and Paul A. Janmey
- 3 A Role for Integrin-ECM Bonds as Mechanotransducers  
that Modulate Adult Stem Cell Fate** ..... 23  
Nathaniel Huebsch and David J. Mooney
- 4 Cell-Generated Forces in Tissue Assembly, Function,  
and Disease**..... 47  
John Huynh, Joseph P. Califano, and Cynthia A. Reinhart-King
- 5 Cell-Cell Interactions and the Mechanics of Cells  
and Tissues Observed in Bioartificial Tissue Constructs**..... 75  
Guy M. Genin, Teresa M. Abney, Tetsuro Wakatsuki,  
and Elliot L. Elson
- 6 Specific and Non-Specific Adhesion in Cancer Cells  
with Various Metastatic Potentials**..... 105  
Xin Tang, Tony Cappa, Theresa Kuhlenschmidt,  
Mark Kuhlenschmidt, and Taher Saif

<b>7</b>	<b>Systems Biology of Tumor Cell Migration in 3D: Protein Signaling</b> .....	123
	Jaya Srivastava and Muhammad H. Zaman	
<b>8</b>	<b>Development of Three-Dimensional Tumor Models for the Study of Anti-Cancer Drug Effects</b> .....	151
	Wei Sun, Raj Rajagopalan, and Chwee Teck Lim	
<b>9</b>	<b>Mechanobiology of Epidermal Keratinocytes: Desmosomes, Hemidesmosomes, Keratin Intermediate Filaments, and Blistering Skin Diseases</b> .....	169
	John C. Selby	
<b>10</b>	<b>Quantifying Cell-Matrix Deformations in Three Dimensions</b> .....	211
	Christian Franck and Stacey A. Maskarinec	
<b>11</b>	<b>Tools for Studying Biomechanical Interactions in Cells</b> .....	233
	Rebecca E. Taylor, Vikram Mukundan, and Beth L. Pruitt	
<b>12</b>	<b>Biomaterials for Studies in Cellular Mechanotransduction</b> .....	267
	Ross DeVolder and Hyunjoon Kong	
<b>13</b>	<b>Optical Sensing of Red Blood Cell Dynamics</b> .....	279
	YongKeun Park, Catherine A. Best, and Gabriel Popescu	
	<b>Index</b> .....	311