

1. Record Nr.	UNINA9910456922003321
Autore	Chauviere Arnaud
Titolo	Cell mechanics : from single scale-based models to multiscale modeling // Arnaud Chauviere, Luigi Preziosi, Verdier Claude
Pubbl/distr/stampa	Boca Raton : , : Chapman & Hall/CRC, , 2009
ISBN	0-429-14709-0 1-282-49554-2 9786612495540 1-4200-9455-6
Descrizione fisica	1 online resource (484 p.)
Collana	Chapman & Hall/CRC mathematical and computational biology series
Altri autori (Persone)	PreziosiLuigi VerdierClaude
Disciplina	571.6
Soggetti	Cells - Mechanical properties - Mathematical models Cells - Mechanical properties - Computer simulation Tumors - Growth - Mathematical models Tumors - Growth - Computer simulation Electronic books.
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Front cover; Part I: From Subcellular to Cellular Properties; Chapter 1. Microhenology of Living Cells at Different Time and Length Scales; Chapter 2. Actin-Based Propulsion: Intriguing Interplay between Material Properties and Growth Processes; Chapter 3. Cancer: Cell Motility and Tumor Suppressor Genes; Part II: Single Cell Migration Modeling; Chapter 4. Coupling of Cytoplasm and Adhesion Dynamics Determines Cell Polarization and Locomotion; Chapter 5. How Do Cells Move? Mathematical Modeling of Cytoskeleton Dynamic and Cell Migration Chapter 6. Computational Framework Integrating Cytoskeletal and Adhesion Dynamics for Modeling Cell MotilityPart III: Mechanical Effects of Environment on Cell Behavior; Chapter 7. History Dependence of Mocrebead Adhesion under Varying Shear Rate; Chapter 8. Understanding Adhesion Sites as Mechanosensitive Cellular Elements; Chapter 9. Cancer Cell Migration on 2-D Deformable Substrates;

Chapter 10. Single-Cell Imaging of Calcium in Response to Mechanical Stimulation; Part IV: From Cellular to Multicellular Models
Chapter 11. Mathematical Framework to Model Migration of Cell Population in Extracellular Matrix
Chapter 12. Mathematical Modeling of Cell Adhesion and Its Applications to Developmental Biology and Cancer Invasion; Chapter 13. Bridging Cell and Tissue Behavior in Embryo Development; Chapter 14. Modeling Steps from Benign Tumor to Invasion Cancer: Examples of Intrinsically Multiscale Problems; Chapter 15. Delaunay Object Dynamics for Tissues Involving Highly Motile Cells; Index; Back cover

Sommario/riassunto

Ubiquitous and fundamental in cell mechanics, multiscale problems can arise in the growth of tumors, embryogenesis, tissue engineering, and more. This book discusses the tool of microrheology for investigating cell mechanical properties, and multiphysics and multiscale approaches for studying intracellular mechanisms in cell motility.
