



Cells, Forces, and the Microenvironment

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With the recent development of new experimental approaches and methodologies, it is becoming clear that cells and tissues are not regulated by biochemical signals alone. Indeed, physical cues arising in the biological microenvironment are directly coupled to the biochemical regulation of living systems. This book provides a broad overview of how mechanical forces and properties govern diverse aspects of physiological and pathological processes. It also covers new emerging techniques developed to study complex biosystems such as microfluidics, traction force microscopy, and the development of novel biomaterials for tissue engineering. Importantly, the chapters in this book are not limited to applications in animal cell biology but also cover important dimensions in other kingdoms such as plants and bacteria. The aim is to provide a comprehensive overview of the roles that physical cues play in governing diverse forms of life, with an eye on the development of fundamental new knowledge, potential applications in biosensors, and novel biomedical technologies.

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Cells, Forces, and the Microenvironment From Pan Stanford Bibliography

- Sales Rank: #5079877 in Books
- Published on: 2015-03-02
- Original language: English
- Number of items: 1
- Dimensions: 1.00" h x 6.10" w x 9.10" l, .0 pounds
- Binding: Hardcover
- 406 pages

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Editorial Review

Review

"This book is an excellent text for the expert or the learner entering the field of mechanobiology. It covers the cues from the forces exerted on cells and by cells to responses to matrix organization and matrix stiffness in how cells grow, crawl, attach, detach, differentiate, and change phenotype. This field is as driven by new techniques as by new data, and this text provides ample information on both with generous helpful use of color figures and a focus on how we understand the most recent key findings."

?Dr. Geoffrey N. Maksym, Dalhousie University, Canada

About the Author

Charles M. Cuerrier received a PhD in pharmacology at the Université de Sherbrooke, Canada. He is currently a postdoctoral fellow at the Center for Interdisciplinary Nanophysics, University of Ottawa, Canada, in collaboration with the University of Ottawa Heart Institute. He is the recipient of a postdoctoral fellowship from the Fonds de Recherche du Québec?Santé and of the Ernest and Margaret Ford Research Fellowship in Cardiology.

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