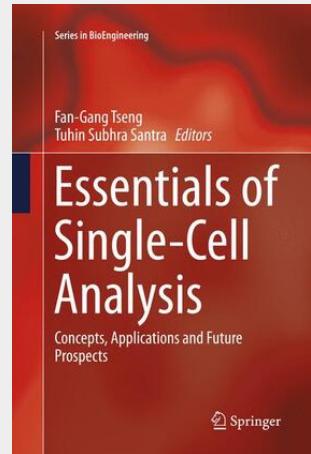


Essentials of Single-Cell Analysis

Concepts, Applications and Future Prospects

This book provides an overview of single-cell isolation, separation, injection, lysis and dynamics analysis as well as a study of their heterogeneity using different miniaturized devices. As an important part of single-cell analysis, different techniques including electroporation, microinjection, optical trapping, optoporation, rapid electrokinetic patterning and optoelectronic tweezers are described in detail. It presents different fluidic systems (e.g. continuous micro/nano-fluidic devices, microfluidic cytometry) and their integration with sensor technology, optical and hydrodynamic stretchers etc., and demonstrates the applications of single-cell analysis in systems biology, proteomics, genomics, epigenomics, cancer transcriptomics, metabolomics, biomedicine and drug delivery systems. It also discusses the future challenges for single-cell analysis, including the advantages and limitations. This book is enjoyable reading material while at the same time providing essential information to scientists in academia and professionals in industry working on different aspects of single-cell analysis. Dr. Fan-Gang Tseng is a Distinguished Professor of Engineering and System Science at the National Tsing Hua University, Taiwan. Dr. Tuhin Subhra Santra is a Research Associate at the California Nano Systems Institute, University of California at Los Angeles, USA.



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