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Nota di contenuto	Chapter 1. A Historical and Technological Background to Organs-on-a-Chip -- Chapter 2. Applications of microfluidics -- Chapter 3. Microfluidics based Organ-on-a-chip for cell biology studies -- Chapter 4. Microfluidics in Chemical biology -- Chapter 5. Role of microfluidics in drug delivery -- Chapter 6. Microfluidics in drug discovery -- Chapter 7. Microfluidic based sensors -- Chapter 8. Background and Organs-on-a-Chip -- Chapter 9. Culture and co-culture of cells for multi organ on chip -- Chapter 10. Cells and organs on a chip in biomedical sciences -- Chapter 11. Futuristic aspects of organ on a chip -- Chapter 12. Development of Human on a chip -- Chapter 13. Multi-organ on a chip for personalized medicine --

Chapter 14. Development and application of Microfluids in organoid formation -- Chapter 15. Liver on a chip -- Chapter 16. Placenta on Chip: A Modern approach to probe fetomaternal interface -- Chapter 17. Microfluidic retina-on-chip -- Chapter 18. Heart on a chip -- Chapter 19. Kidney on a chip -- Chapter 20. Lungs on a chip -- Chapter 21. Brain on a chip -- Chapter 22. Skin on a chip -- Chapter 23. Organs-on-a-chip in preclinical studies -- Chapter 24. Application of organ on chip in blood brain barrier model -- Chapter 25. Multi organs on a chip in disease modeling -- Chapter 26. Prospects of Medical device on a chip -- Chapter 27. Lab on a chip for precision Medicine -- Chapter 28. Tumour-on-a-chip : Perfusion systems to model the extracellular breast tumour microenvironment:from tumour progression to metastasis formation -- Chapter 29. Building Human In Vitro 3D Models to Replace Animal Studies: During Drug Discovery Research: Scientific, Ethical and Regulatory Considerations.

Sommario/riassunto

This book highlights the application of microfluidics in cell biology research, chemical biology, and drug discovery. It covers the recent breakthroughs and prospects of organ-on-a-chip, human-on-a-chip, multi-organ-on-a-chip for personalized medicine. The book presents the preclinical studies of organs-on-a-chip, concepts of multiple vascularized organ-on-chips, application of organ-on-a-chip in blood-brain barrier model, culture and co-culture of cells on multi-organ-on-chip and parameter measurements in microfluidic devices. It underscores the advantage of microfluidic devices for developing efficient drug carrier particles, cell-free protein synthesis systems, and rapid techniques for direct drug screening. Further, it entails human-on-a-chip for measuring the systemic response as well as immediate effects of an organ reaction on other organs. In summary, this book reviews the development of a microfluidic-based organ-on-a-chip device for the preclinical evaluation, ADME studies of drugs, chemicals, and medical devices. This book is a valuable source for pharma companies, product developers, students, researchers, academicians, and practitioners.
