1.	Record Nr.	UNINA9910136413703321
	Titolo	Bioreactors : design, operation and novel applications / / edited by Carl-Fredrik Mandenius
	Pubbl/distr/stampa	Weinheim, Germany : , : Wiley-VCH Verlag GmbH & Company KGaA, , [2016] ©2016
	ISBN	3-527-68338-0 1-5231-1519-X 3-527-68336-4 3-527-68337-2
	Descrizione fisica	1 online resource (603 p.)
	Soggetti	Bioreactors - Design and construction
	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	Title Page; Copyright; Table of Contents; Preface; List of Contributors; Chapter 1: Challenges for Bioreactor Design and Operation; 1.1 Introduction; 1.2 Biotechnology Milestones with Implications on Bioreactor Design; 1.3 General Features of Bioreactor Design; 1.4 Recent Trends in Designing and Operating Bioreactors; 1.5 The Systems Biology Approach; 1.6 Using Conceptual Design Methodology; 1.7 An Outlook on Challenges for Bioreactor Design and Operation; References; Chapter 2: Design and Operation of Microbioreactor Systems for Screening and Process Development; 2.1 Introduction 2.2 Key Engineering Parameters and Properties in Microbioreactor Design and Operation2.3 Design of Novel Stirred and Bubble Aerated Microbioreactors; 2.4 Robotics for Microbioreactors; 2.5 Fed-Batch and Continuous Operation of Microbioreactors; 2.6 Monitoring and Control of Microbioreactors; 2.7 Conclusion; References; Chapter 3: Bioreactors on a Chip; 3.1 Introduction; 3.2 Advantages of Microsystems; 3.3 Scaling Down the Bioreactor to the Microfluidic Format; 3.4 Microfabrication Methods for Bioreactors-On-A-Chip; 3.5 Fabrication Materials

3.6 Integrated Sensors for Key Bioreactor Parameters3.7 Model Organisms Applied to BRoCs; 3.8 Applications of Microfluidic Bioreactor Chip; 3.9 Scale Up; 3.10 Conclusion; References; Chapter 4: Scalable Manufacture for Cell Therapy Needs; 4.1 Introduction; 4.2 Requirements for Cell Therapy; 4.3 Stem Cell Types and Products; 4.4 Paradigms in Cell Therapy Manufacture; 4.5 Cell Therapy Manufacturing Platforms; 4.6 Microcarriers and Stirred-Tank Bioreactors; 4.7 Future Trends for Microcarrier Culture; 4.8 Preservation of Cell Therapy Products: 4.9 Conclusions: References Chapter 5: Artificial Liver Bioreactor Design 5.1 Need for Innovative Liver Therapies; 5.2 Requirements to Liver Support Systems; 5.3 Bioreactor Technologies Used in Clinical Trials; 5.4 Optimization of Bioartificial Liver Bioreactor Designs; 5.5 Improvement of Cell Biology in Bioartificial Livers; 5.6 Bioreactors Enabling Cell Production for Transplantation; 5.7 Cell Sources for Bioartificial Liver Bioreactors; 5.8 Outlook; References; Chapter 6: Bioreactors for Expansion of Pluripotent Stem Cells and Their Differentiation to Cardiac Cells; 6.1 Introduction 6.2 Culture Technologies for Pluripotent Stem Cell Expansion6.3 3D Suspension Culture; 6.4 Autologous Versus Allogeneic Cell Therapies: Practical and Economic Considerations for hPSC Processing; 6.5 Upscaling hPSC Cardiomyogenic Differentiation in Bioreactors; 6.6 Conclusion; References; Chapter 7: Culturing Entrapped Stem Cells in Continuous Bioreactors; 7.1 Introduction; 7.2 Materials Used in Stem Cell Entrapment; 7.3 Synthetic Materials; 7.4 Natural Materials; 7.5 Manufacturing and Regulatory Constraints; 7.6 Mass Transfer in the **Entrapment Material** 7.7 Continuous Bioreactors for Entrapped Stem Cell Culture