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Titolo	3D Bioprinting : Modeling In Vitro Tissues and Organs Using Tissue-Specific Bioinks // by Dong-Woo Cho, Byoung Soo Kim, Jinah Jang, Ge Gao, Wonil Han, Narendra K. Singh
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ISBN	3-030-32222-X
Edizione	[1st ed. 2019.]
Descrizione fisica	1 online resource (124 pages) : illustrations
Disciplina	610.28
Soggetti	Biomedical engineering Regenerative medicine Tissue engineering Mechanical engineering Impressió 3D Enginyeria biomèdica Biomedical Engineering/Biotechnology Biomedical Engineering and Bioengineering Regenerative Medicine/Tissue Engineering Mechanical Engineering Llibres electrònics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Includes index.
Nota di contenuto	Introduction -- Definition, necessity, and prerequisites for modeling 3D tissues and organs -- Prevalent technologies for in vitro tissue/organ biofabrication -- 3D cell printing techniques -- Decellularized extracellular matrix-based bioinks -- Skin -- Blood vessels -- Liver -- Kidney -- Cardiac -- Airway -- Brain -- Muscle -- Conclusion and future perspective.
Sommario/riassunto	The volume offers a fundamental knowledge in modeling in vitro tissues/organs as an alternative to 2D cell culture and animal testing. Prior to engineering in vitro tissues/organs, the descriptions of prerequisites (from pre-processing to post-processing) in modeling in

in vitro tissues/organs are discussed. The most prevalent technologies that have been widely used for establishing the in vitro tissue/organ models are also described, including transwell, cell spheroids/sheets, organoids, and microfluidic-based chips. In particular, the authors focus on 3D bioprinting in vitro tissue/organ models using tissue-specific bioinks. Several representative bioprinting methods and conventional bioinks are introduced. As a bioink source, decellularized extracellular matrix (dECM) are importantly covered, including decellularization methods, evaluation methods for demonstrating successful decellularization, and material safety. Taken together, the authors delineate various application examples of 3D bioprinted in vitro tissue/organ models especially using dECM bioinks. This book may provide an introductory guide for modeling in vitro tissues/organs and for opening up a gate for beginners including teachers and undergraduate/graduate students. -Provides strategic insight into the biofabrication of in vitro tissues and organs; -Introduces 3D cell-printing techniques and dECM-based bioinks; -Includes examples of 3D cell printed in vitro tissues/organs.

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