Special Issue

3D Bioprinting Advanced Vascularized Tissues and Organs

Message from the Guest Editors

3D bioprinting has emerged as a developing opportunity to biofabricate viable and functional tissues for preclinical and clinical applications. 3D bioprinting comprises a diversity of approaches, including extrusion-, ink-jet- and stereolithography-based printing platforms, to name a few. Despite its scalability, reproducibility, and precision in locating cells according to a desired geometry, a major challenge with bioprinting tissues remains the recapitulation of a robust functional vascular network, necessary for the transportation of nutrients and oxygen throughout engineered constructs, as well as the elimination of cellular waste and CO2. This Special Issue covers recent developments in vascular tissue engineering and related key features of 3D-bioprinting platforms, with a particular focus on technical requirements for the recapitulation of native vasculature. It includes advanced methods and biomaterials for vascularizing bioinks, together with perspectives on the optimal use of vascularized 3D bioprinted tissues for disease modeling, high-throughput screening of drugs, tissue replacement therapy and medical device development.

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Deadline for manuscript submissions

closed (31 October 2024)

Bioengineering

an Open Access Journal by MDPI

Impact Factor 3.7
CiteScore 5.3
Indexed in PubMed

mdpi.com/si/189162

Bioengineering
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Editor-in-Chief

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