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Microfluidic Bioprinting of Heterogeneous 3D Tissue Constructs Using Low-Viscosity Bioink

By: Colosi, C (Colosi, Cristina)^[1,2,3]; Shin, SR (Shin, Su Ryon)^[1,2,4]; Manoharan, V (Manoharan, Vijayan)^[1,2]; Massa, S (Massa, Solange)^[1,2,5]; Costantini, M (Costantini, Marco)^[3]; Barbetta, A (Barbetta, Andrea)^[3]; Dokmeci, MR (Dokmeci, Mehmet Remzi)^[1,2,4]; Dentini, M (Dentini, Mariella)^[3]; Khademhosseini, A (Khademhosseini, Ali)^[1,2,4,6,7]

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Abstract

A novel bioink and a dispensing technique for 3D tissue-engineering applications are presented. The technique incorporates a coaxial extrusion needle using a low-viscosity cell-laden bioink to produce highly defined 3D biostructures. The extrusion system is then coupled to a microfluidic device to control the bioink arrangement deposition, demonstrating the versatility of the bioprinting technique. This low-viscosity cell-responsive bioink promotes cell migration and alignment within each fiber organizing the encapsulated cells.

Keywords

KeyWords Plus: GELATIN METHACRYLATE; MICROSCALE ORGANIZATION; CELL ENCAPSULATION; HYDROGELS; TECHNOLOGY; COMPLEX; PROLIFERATION; STIFFNESS; PECAM-1; CULTURE

Author Information

Reprint Address: Khademhosseini, A (reprint author)

+ Harvard Univ, Biomat Innovat Res Ctr, Sch Med, Brigham & Womens Hosp, Cambridge, MA 02139 USA.

Reprint Address: Khademhosseini, A (reprint author)

+ Harvard MIT Div Hlth Sci & Technol, Cambridge, MA 02139 USA.

Reprint Address: Dentini, M (reprint author)

+ Univ Roma La Sapienza, Dept Chem, Piazzale Aldo Moro 5, I-00185 Rome, Italy.

Reprint Address: Khademhosseini, A (reprint author)

Wyss Inst Biol Inspired Engn, Boston, MA 02115 USA.

Reprint Address: Khademhosseini, A (reprint author)

+ Konkuk Univ, Dept Bioind Technol, Coll Anim Biosci & Technol, Seoul 143701, South Korea.

Reprint Address: Khademhosseini, A (reprint author)

+ King Abdulaziz Univ, Dept Phys, Jeddah 21569, Saudi Arabia.

Addresses:

+ [1] Harvard Univ, Biomat Innovat Res Ctr, Sch Med, Brigham & Womens Hosp, Cambridge, MA 02139 USA

+ [2] Harvard MIT Div Hlth Sci & Technol, Cambridge, MA 02139 USA

+ [3] Univ Roma La Sapienza, Dept Chem, Piazzale Aldo Moro 5, I-00185 Rome, Italy

[4] Wyss Inst Biol Inspired Engn, Boston, MA 02115 USA

+ [5] Univ Los Andes, Programa Doctorado Biomed, Santiago 7620001, Chile

+ [6] Konkuk Univ, Dept Bioind Technol, Coll Anim Biosci & Technol, Seoul 143701, South Korea

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+ [7] King Abdulaziz Univ, Dept Phys, Jeddah 21569, Saudi Arabia

E-mail Addresses: mariella.dentini@uniroma1.it; alik@rics.bwh.harvard.edu

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