Granular Hydrogel Bioinks with Preserved Interconnected Microporosity and the Use Thereof

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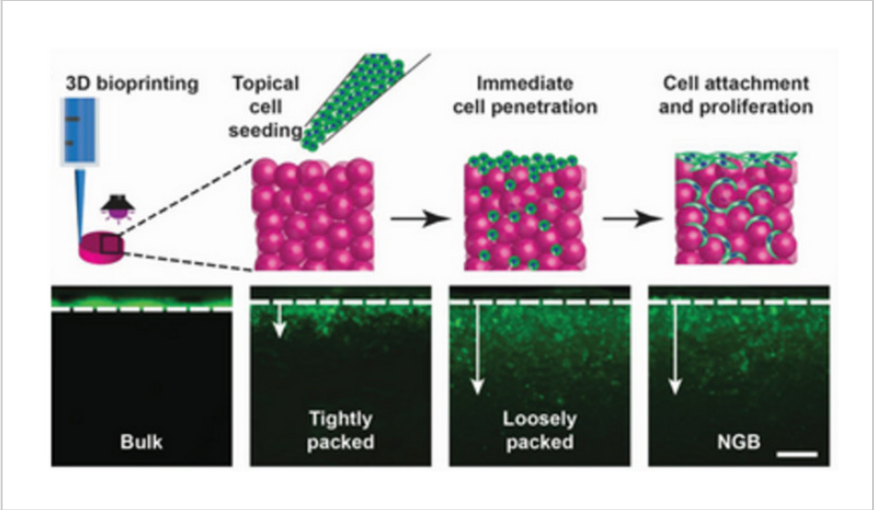

Figure 1: Schematic bioprinting, photocrosslinking, microgel assembly

Technology Summary

Three-dimensional (3D) bioprinting of granular hydrogels comprising discrete hydrogel microparticles, or microgels, may overcome the intrinsic structural limitations of poor cell penetration and oxygen transfer using specialized nanoparticles. The resulting NGB bioink has excellent printability and shape fidelity while maintaining microporosity, allowing for immediate cell seeding after printing without specific matching between cells and scaffold. This technology provides a versatile platform for creating various granular scaffolds and can be extended to other microgel materials.

Application & Market Utility

The technology offers significant advancements in tissue engineering and regeneration through the preservation of microporosity and improved printability, allowing for immediate post-print cell seeding without compromising cell viability. This innovation can serve as a versatile platform for the fabrication of tissue constructs with enhanced shape fidelity to create complex tissue models and regenerative therapies. Such unique properties make it a promising solution for the biofabrication market, attracting interest from tissue engineering, personalized medicine, and drug testing industries.

Next Steps

The research plan and methods have been introduced and are currently being tested in the laboratory, with further research to be conducted. Possible licensing opportunities are being investigated.

TECHNOLOGY READINESS LEVEL 4

Seeking

Investment | Licensing | Research

Keywords

- Hydrogel
- Porosity
- 3D Printing

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