

β -Cell Microsphere Fabrication for Diabetes Treatment

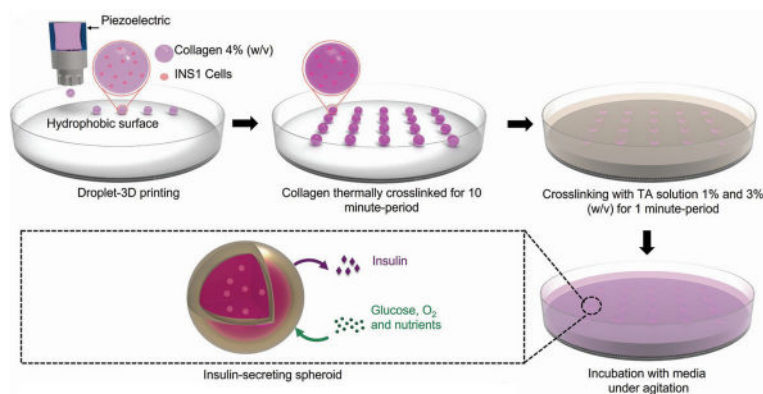


Clua-Ferré L, Chiara F, Rodríguez-Comas J, Comelles J, Martínez E, Godeau AL, García-Alamán A, Gasa R, Ramón-Azcón J. Collagen-Tannic Acid Spheroids for β -Cell Encapsulation Fabricated Using a 3D Bioprinter. Adv. Mater. Technol. 2022, 2101696.

Overview

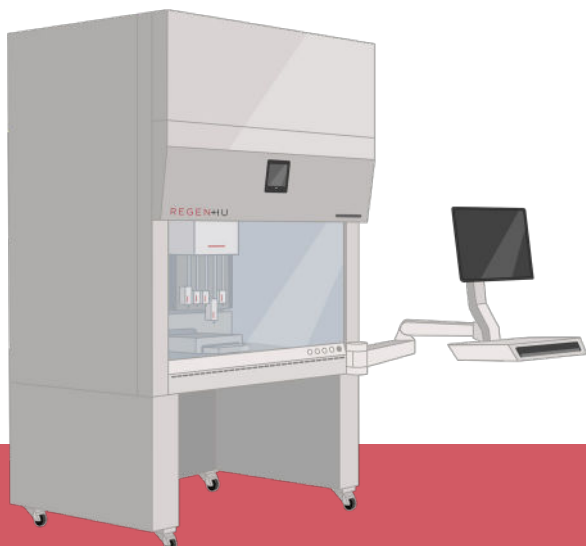
Insulin injections are the leading therapeutic options for Type 1 Diabetes; however, they fail to emulate the highly dynamic nature of insulin release that β -cells provide. Encapsulation of β -cells within biomaterials has emerged as a promising approach to mimic native islets.

Current techniques are laborious and limited in terms of cell viability and repeatability. To overcome these constraints, in this study, a high-throughput, automated 3D bioprinting approach was used to encapsulate β -cells in biomimetic spheroids of collagen bioink crosslinked with tannic acid (TA).



Results

- ✔ Significant decrease in time response to blood glucose changes
- ✔ Preserved cell viability and insulin production functionality for up to 30 days



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60 spheroid arrays in less than 1min

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