Bioprinted Pancreas-on-a-Chip Platform for Drug Response Evaluation

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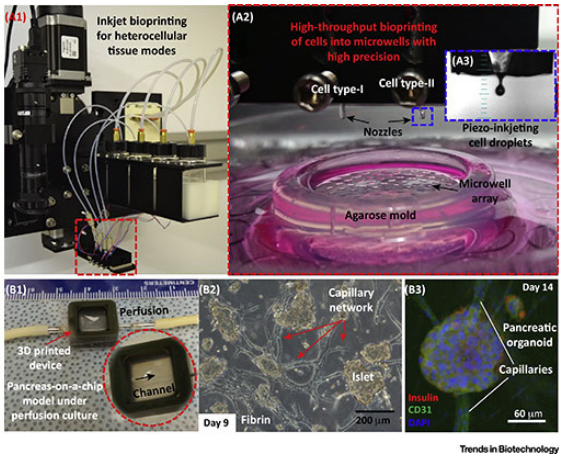

Pancreas-on-a-chip for TD1 response

Technology Summary

This technology describes a chip that can be used to evaluate pancreatic function and response to TD1 pharmaceuticals. The chip acts as a perfusable human pancreas model with embedded vascularization. The design includes a microfluidics chamber, a bioprinted extracellular matrix, and adipose-derived stem cells directed towards a beta-cell fate. A lumen is formed within the extracellular matrix, which can be perfused with cells, culture media, or other perfusate. This “organ on a chip” recreates the key features of a pancreatic microenvironment and can be used for screening drugs that regulate pancreatic function.

Application & Market Utility

Real-time observation of cell morphology and drug response. Keeps tissue intact for testing various TD1 drugs. Capable of long-term perfusion (up to 26 days), First successful culture of pancreatic islets in a 3D vascularized form. First successful 3D bioprinting system for pancreatic islets.

Next Steps

Seeking licensing with biomedical industry partner for commercialization of innovation.

TECHNOLOGY READINESS LEVEL 1-3

Seeking

Investment | Licensing | Research

Keywords

- TD1 response
- drug screening
- pancreatic islets
- 3D bioprinting
- perfusable vascularized tissue

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