Electronic Supplementary Material (ESI) for Biomaterials Science.
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Supporting information

Construction of engineered 3D islet micro-tissue using porcine decellularized ECM for the treatment of diabetes

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Table S1. Sequences of primers used for RT-PCR

Gene	Forward primer	Reverse primer
CD3	GGCTTGCTGATGGTCATTT	GGCTCATAGTCTGGGTTGG
IL-1α	CCCGTGTTGCTGAAGGAGT	GACTTTGTTCTTTGGTGGC
IL-1β	ATGAGCTGGTGAGTGACTTG	CACAGTTGGTCTTCTGGGT
IL-6	TTGCCTTCTTGGGACTGAT	TTGCCATTGCACAACTCTT
IL-8	TGCTGGCTGTCCTTAACCT	TTGGGACTGCTATCACTTCCT
TNF-α	TCTCATTCCTGCTTGTGGC	CACTTGGTGGTTTGCTACG

Table S2. Porosity of decellularized acellular hydrogels.

Specimen	Adipose Gel	Pancreas Gel	Liver Gel
M_{dry} (g)	0.0185	0.0256	0.0312
M_{wet} (g)	0.1036	0.1252	0.1912
V_{eth} (mL)	0.1078	0.1262	0.2028
Porosity (%)	87.49	85.54	88.64

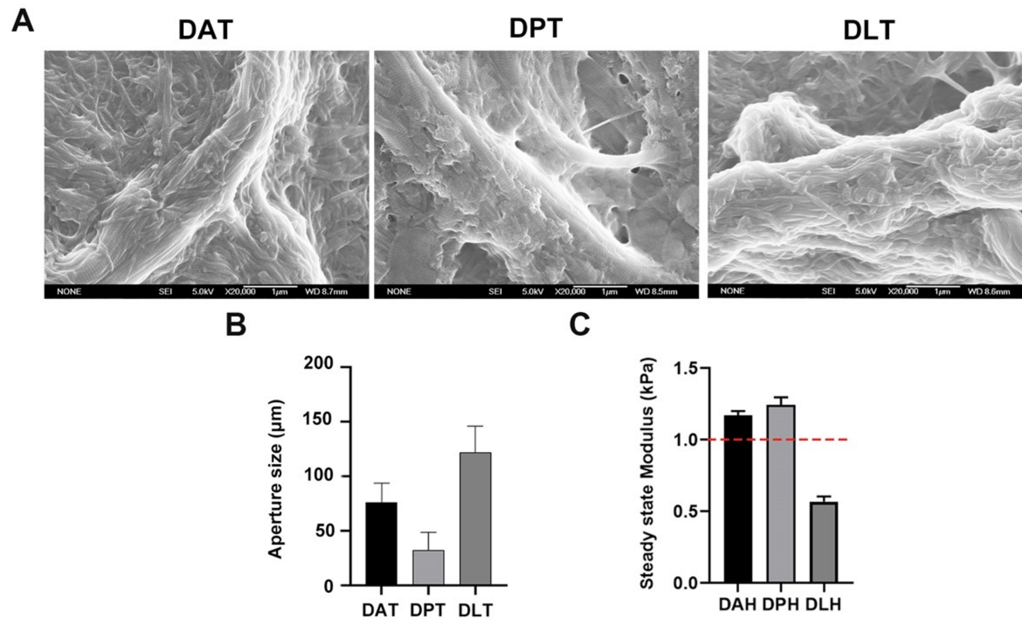

Fig. S1. Microstructure and biochemical properties of decellularized scaffolds. A) Scanning electron microscopy of decellularized scaffolds of adipose (DAT), pancreas

(DPT), and liver (DLT) tissues. B) Aperture sizes of scaffolds. C) Steady-state modulus of hydrogel. Dashed red line = reported steady state modulus of normal human pancreatic tissue.

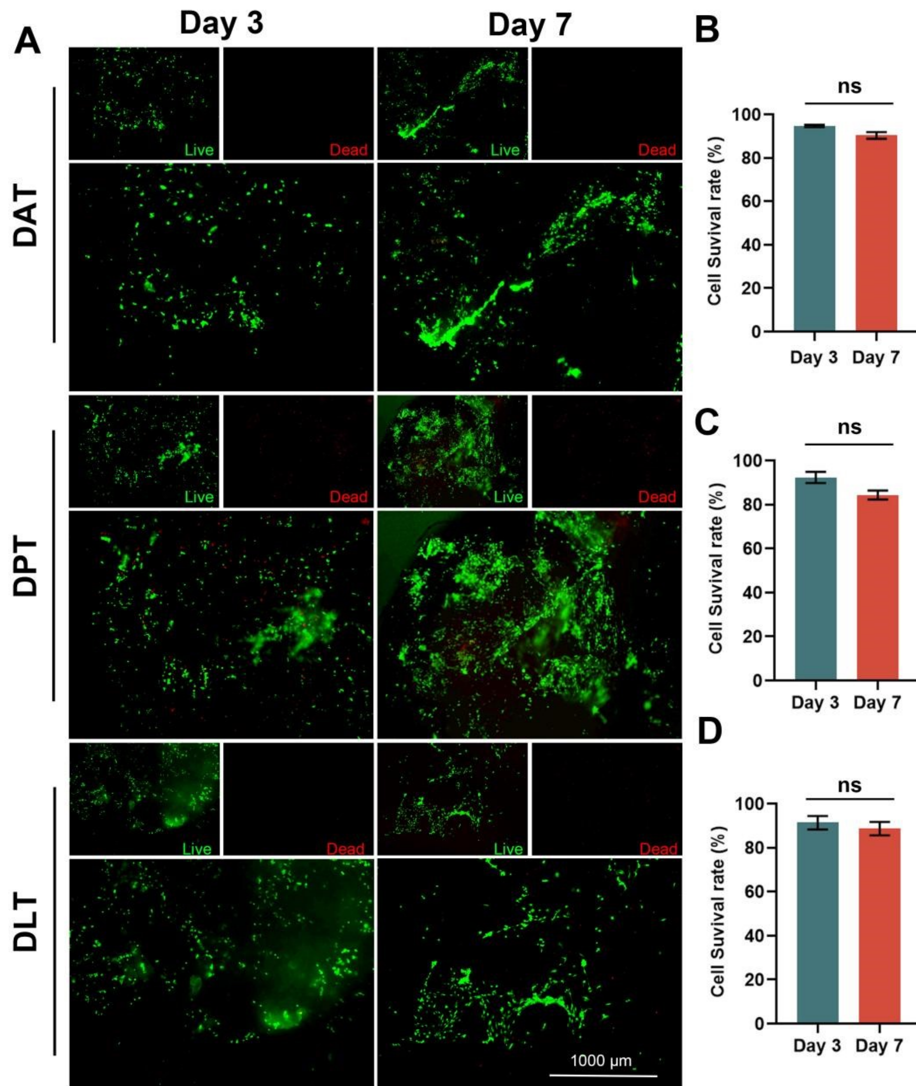

Fig. S2. Toxicity of decellularized scaffolds. A) Live/Dead staining after 3 and 7 days of cell inoculation on varied decellularized scaffolds (adipose (DAT), pancreas (DPT), and liver (DLT)). Cell activity was quantified on Day 3 and Day 7 after inoculation on B) DAT, C) DPT, and D) DLT scaffolds.

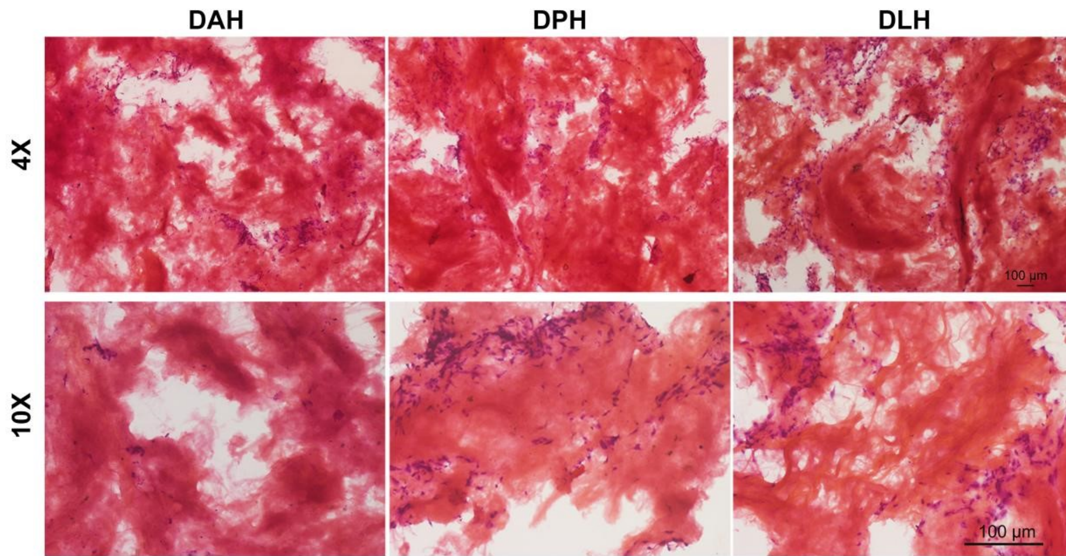

Fig. S3. Distribution of encapsulated INSL-1 cells in dECM hydrogels. Cells were stained with hematoxylin (nucleus) and eosin (cytoplasm).

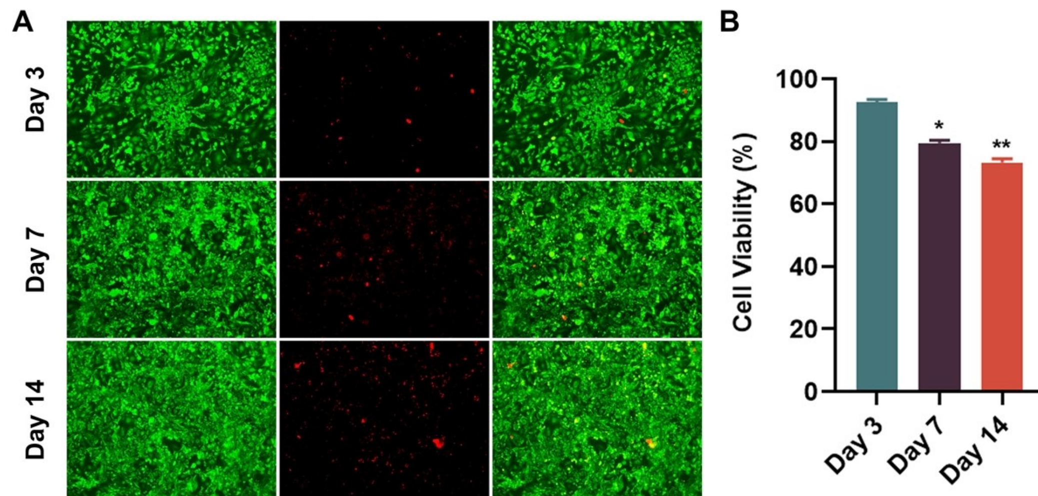

Fig. S4. Cell viability. A) Live/Dead staining of islet microtissues in two dimensional culture for different days. B) Quantification of Live/Dead assay results.

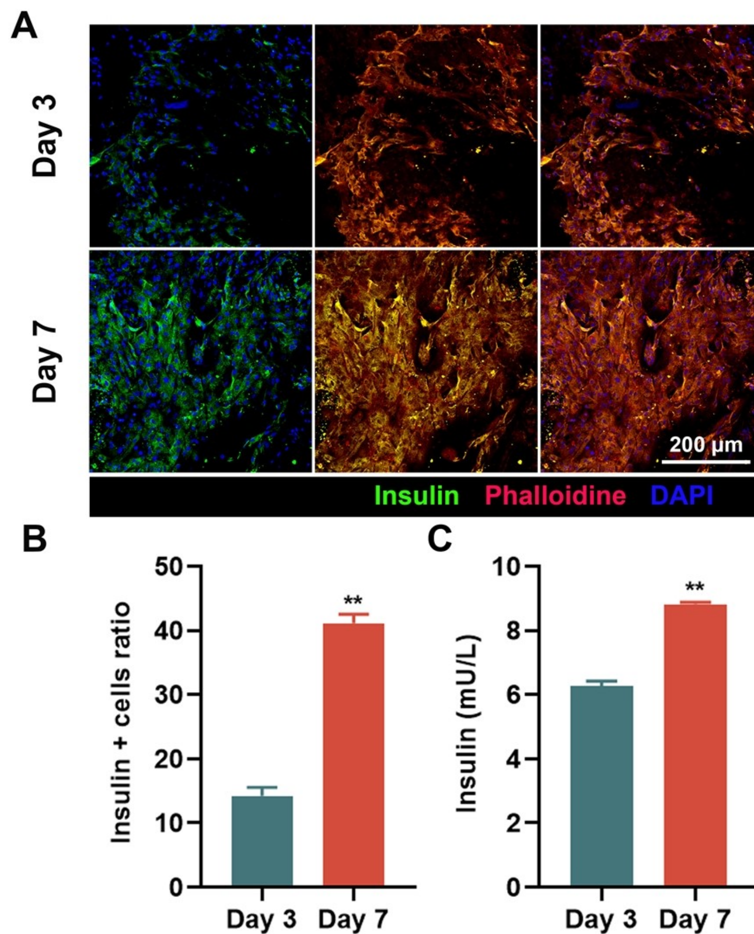

Fig. S5. Insulin secretion in DPH at different time points. A). Confocal images showed insulin expression in DPH at different days. Scale bar = 200 μm. B). Quantification of insulin fluorescent images. C) Elisa was used to measure insulin secretion at different time points.

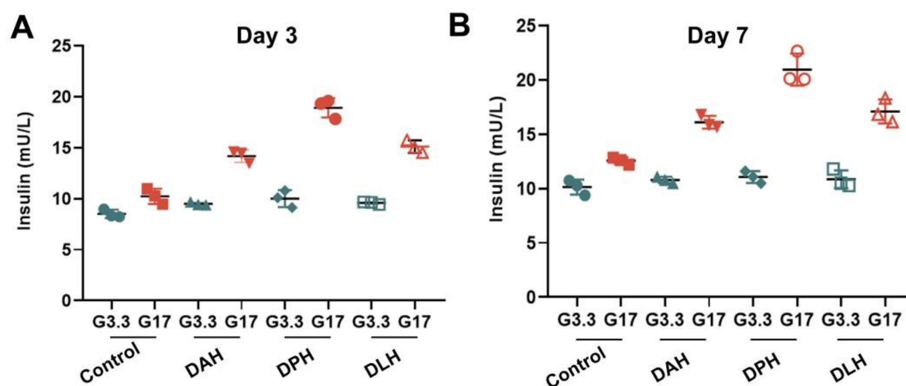

Fig. S6. Insulin secretion in response to 3.3 mM (G3.3) or 17 mM (G17) glucose from control, DAH, DPH and DLH (n = 3). A) Insulin secretion on Day 3. B) Insulin secretion on Day 7.

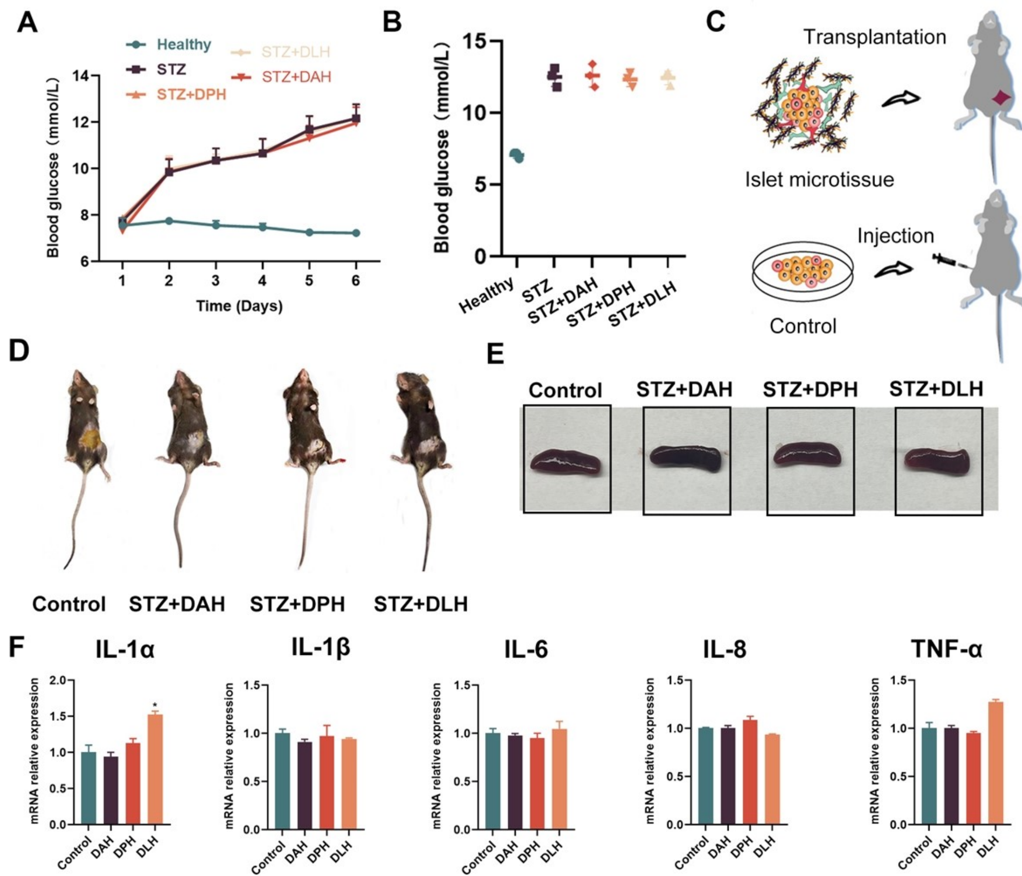

Fig. S7. *In vivo* experiment. A) Blood glucose was recorded during continuous STZ injection. B) Fasting blood glucose values of mice after five consecutive days of STZ injection (values greater than 11.2 mmol/L indicated successful induction of diabetes). C) Schematic diagram of animal experiment using diabetic mice. D) Islet micro-tissues (STZ+DAH, STZ+DPH, and STZ+DLH groups) were implanted subcutaneously into C57BL/6 diabetic mice. E) Physical spleen map. F) Expression of inflammatory cytokines in spleen.