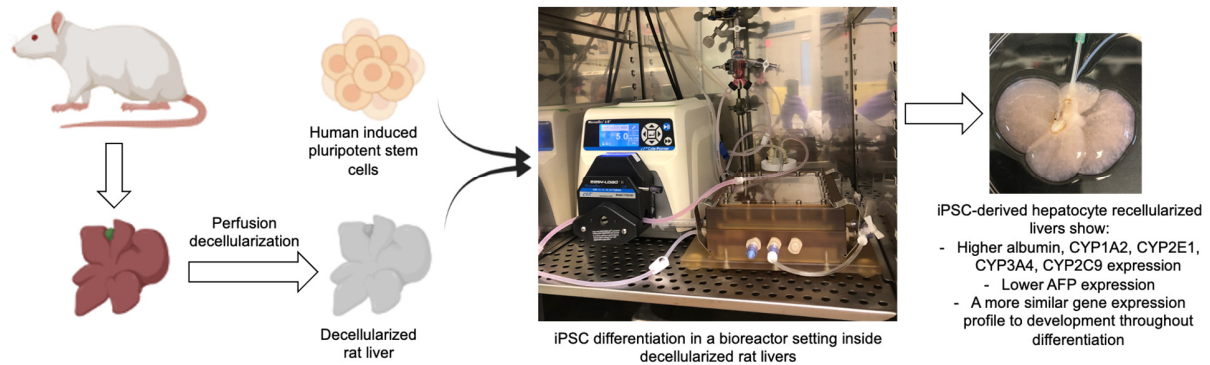
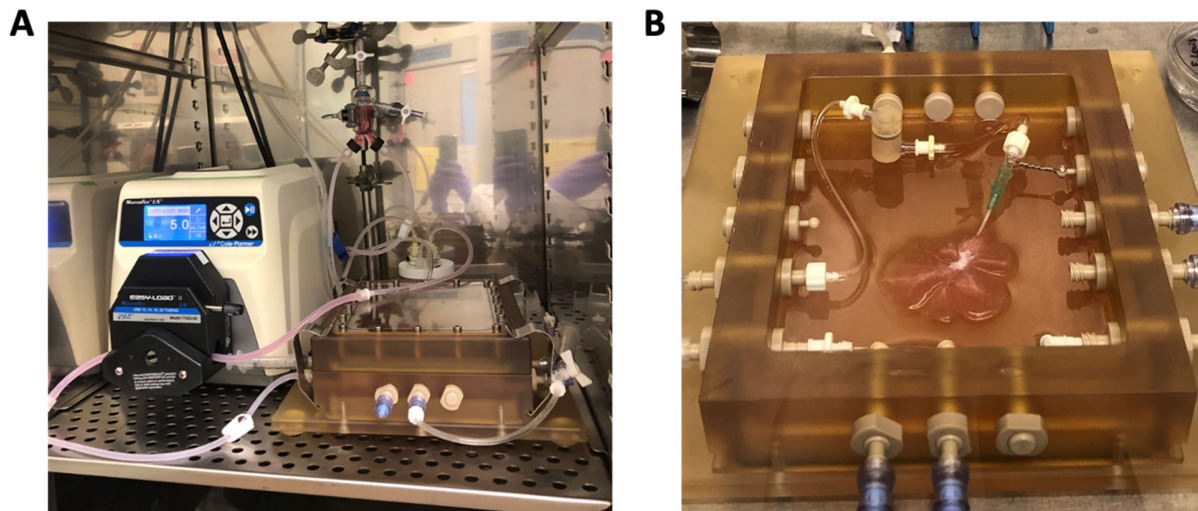


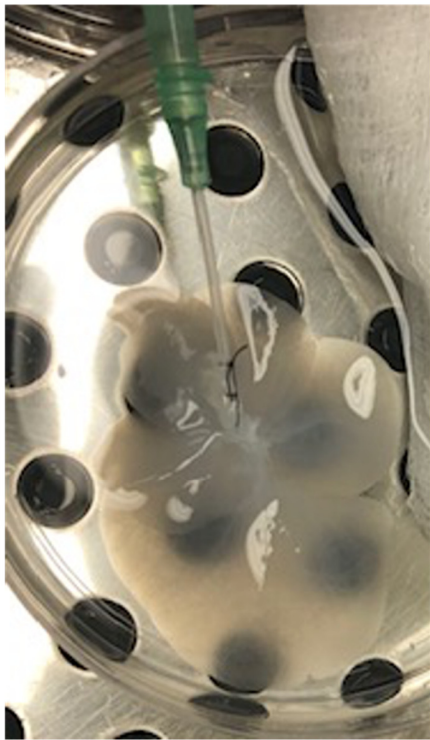
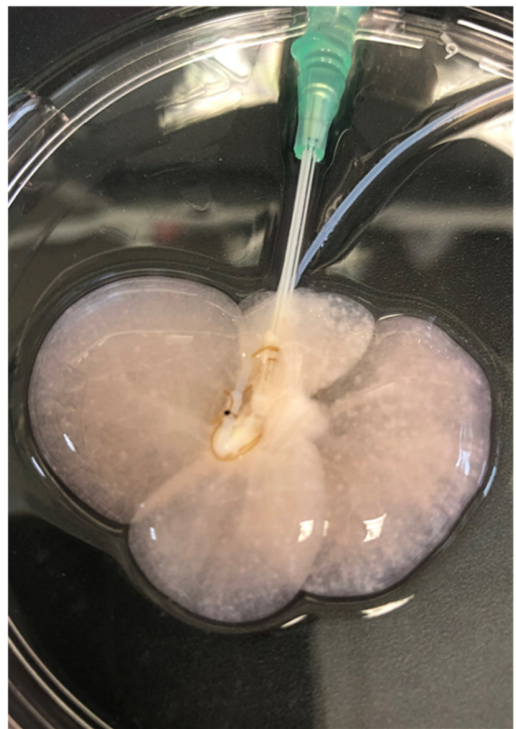
Supplemental Information **for** **Human-origin iPSC-based recellularization of decellularized whole rat livers**



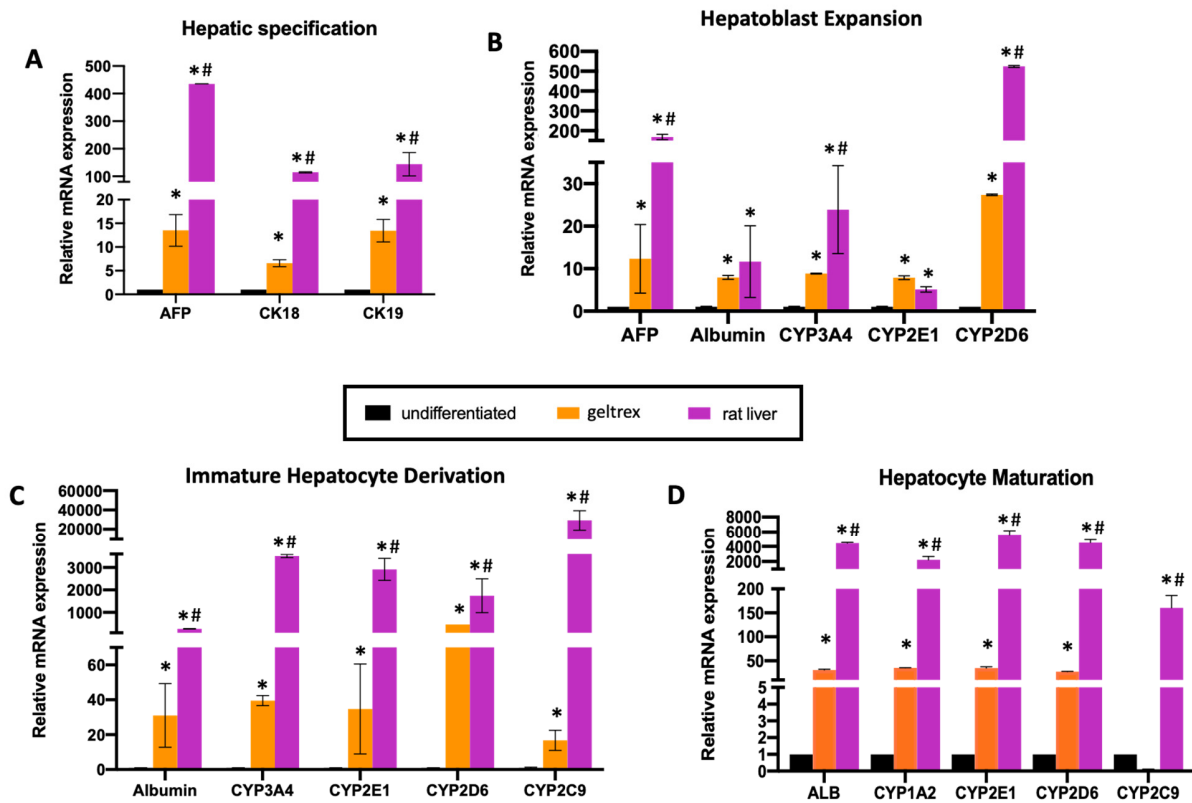
Supplementary Figure S1. Schematic representation of the study. Rat livers were decellularized and populated with undifferentiated human iPSCs in a bioreactor system. Within the bioreactor the iPSCs were differentiated to hepatocytes using a 20-day long protocol, followed by a 7-day maturation step, under perfusion culture. The recellularized livers were characterized at different stages of differentiation to show mRNA expression patterns throughout compared cells differentiated on geltrex. In addition, the functionality of the livers were determined at the end of maturation step.



Supplementary Figure S2. (A) The bioreactor system used for recellularization of decellularized rat livers. (B) The inside of the bioreactor chamber with a rat liver being perfused with culture media prior to cell seeding.

A**B**

Supplementary Figure S3. (A) The rat liver at the end of decellularization. (B) The picture of a recellularized rat liver at the end of IHC stage.



Supplementary Figure S4. The mRNA expression levels of key markers specific to early and mature hepatic markers as normalized to expression in undifferentiated iPSCs. The qRT-PCR analysis showing the mRNA expression of (A) early hepatic markers at HS stage, and the mRNA expression of mature hepatic markers at (B) HE stage, (C) IHC stage, and (D) HM stage, relative to undifferentiated iPSCs. (* indicates statistically significant difference compared to undifferentiated iPSCs ($p < 0.05$) and # represents statistically significant difference in decellularized rat liver group compared to geltrex group ($p < 0.05$))

Supplementary Table S1. Primers for qRT-PCR

ALBUMIN	TCTTCTGTCAACCCACACG	GCAACCTCACTCTTGTGTGC
CYP1A2	CTTCTTCCCATCCTTCGCTA	AGGAACCTCTGGTTGAAGGC
CYP2E1	GGTGAGTGTTAGAGTTACTTGAGGA	TAGAGGTTAGAGCTGCCCT
CYP2D6	AGCACTTCAGCTTCTCGGTG	GCACAAAGCTCATAGGGGGA
CYP3A4	CTTCTTCCCATCCTTCGCTA	AGGAACCTCTGGTTGAAGGC
CYP2C8	ACTACCTCATCCCAAGGGC	TTGGATTAGGAAATTCCTTGTCA
GAPDH	AATGGGCAGCCGTAGGAAA	GCCCAATACGACCAATCAGAG
AFP	CAGGGTGTTAGAAAACAGCTAC	TGCTGGAGTGGGCTTTTGT
CK18	GAGGGCTCAGATCTTCGCAA	CCAGCTGCAGTCGTGTGATA
CK19	TGGAGATGCAGATCGAAGGC	CTCAGCGTACTGATTCTCTCT
OCT-4	CGAGAAGGATGTGGTCCGAG	TGTGCATAGTCGCTGCTTGA
NANOG	CAATGGTGTGACGCAGGGAT	TGCACCAGGTCTGAGTGTTT
FOXA2	ATTTCTTCTCCCTTGCGTCT	CTCTTAAGAAGACGACGGCT
GATA4	GTAGTGAGATGACAGGCCAG	GGATCAAACCAGAAAACGG
SOX17	CGCACGGAATTTGAACAGTA	GGATCAGGGACCTGTACAC