Table S1. Primers used in this work

Gene name	Primer sequence (5' to 3') *F, Forward; R, Reverse
IL-1β	F: AATCTGTACCTGTCCTGCGTGTT R: TGGGTAATTTTTGGGATCTAACTCT
TNFα	F: TCAGATCATCTTCTCGAACCCC R: ATCTCTCAGCTCCACGCCAT
IL-6	F: GGAGACTTGCCTGGTGAAAA R: GTCAGGGGTGGTTATTGCAT
TGFβ1	F: GGCCAGATCCTGTCCAAGC R: GTGGGTTTCCACCATTAGAC
IL-10	F: GGTTGCCAAGCCTTGTCTGA R: AGGGAGTTCACATGCGCCT
OCT4	F: GAAGGATGTGGTCCGAGTGT R: GTGAAGTGAGGGCTCCCATA
NANOG	F: CAAAGGCAAACAACCCACTT R: TCTGCTGGAGGCTGAGGTAT
SOX2	F: AACCCCAAGATGCACAACTC R: CGGGGCCGGTATTTATAATC
CPM	F: GGATGGAAGCGTTTTTGAAG R: CCACAACAAGAACCCACAGG
HNF4A	F: CAGGCTCAAGAAATGCTTCC R: GGCTGCTGTCCTCATAGCTT
AFP	F: AGACTGCTGCAGCCAAAGTGA R: GTGGGATCGATGCTGGAGTG
ALB	F: TGCTGATGAGTCAGCTGAAAA R: TCAGCCATTTCACCATAGGTT
CYP3A4	F: TTTTGTCCTACCATAAGGGCTTT R: CACAGGCTGTTGACCATCAT
EPCAM	F: GCCAGTGTACTTCAGTTGGTGC R: CCCTTCAGGTTTTGCTCTTCTCC
UGT1A6	F: GCCCTGTGATTTGGAGAGTGA R: AGGCTTCAAATTCCTGAGACAAGT
CYP1A2	F: CGGACAGCACTTCCCTGAGA R: AGGCAGGTAGCGAAGGATGG
MRP2	F: AGCGTCCTCTGACACTCG R: GGCATCTTGGCTTTGACT
ASGR1	F: CAGCAACTTCACAGCCAGCA R: AGCTGGGACTCTAGCGACTT
HNF1A	F: TGGGTCCTACGTTCACCAAC R: TCTGCACAGGTGGCATGAGC
GATA6	F: GAGGCTTGCTGAAAGAGTGAGAGAAGA R: TCCTAGTCCTGGCTTCTGGAAGTG
SOX17	F: CAAGGGCGAGTCCCGTAT R: CGACTTGCCCAGCATCTT
GAPDH	F: GCCTCAAGATCATCAGCAATGC R: TGGTCATGAGTCCTTCCACGAT
B2M (Indel sequencing primer)	F: GCTATGAGTGCTGAGAGGGC R: CACGGCAGGCATACTCATCT
Human mitochondrial DNA	F: CAACACTAAAGGACGAACCTGA R: TCGTAAGGGGTGGATTTTTC
ALP	F: ACCATTCCCACGTCTTCACATTT R: AGACATTCTCTCGTTCACCGCC
OCN	F: CAAAGGTGCAGCCTTTGTGTC R: TCACAGTCCGGATTGAGCTCA
FABP4	F: GCTTTGCCACCAGGAAAGTG R: ATGGACGCATTCCACCACCA
PPARγ	F: GATACACTGTCTGCAAACATATCACAA R: CCACGGAGCTGATCCCAA

Table S2. Information on genes associated with hepatic development

No.	Gene ID	Gene Name	Function	Regulation	Relevance score (from genecards)
1	GATA6	GATA Binding Protein 6	Regulates hepatic fate by acting endoderm-related and hepatic development genes	Enhanced	16.18
2	SOX17	SRY-Box Transcription Factor 17	Necessary for endoderm formation, hepatic development, and hepatocyte differentiation	Enhanced	7.42
3	KIT	KIT Proto-Oncogene, Receptor Tyrosine Kinase	Express in hepatic progenitors. Regulates cell differentiation and proliferation	Enhanced	34.47
4	AFP	Alpha Fetoprotein	Marker of hepatic progenitors and hepatocytes	Enhanced	59.09
5	c-MET	MET Proto-Oncogene, Receptor Tyrosine Kinase	Hepatocyte growth factor (HGF) receptor. It required for hepatocyte survival including liver development	Enhanced	26.27
6	FGF2	Fibroblast Growth Factor 2	Require to specify hepatic fate within the definitive endoderm through activation of the FGF receptors	Enhanced	24.77
7	EGF	Epidermal Growth Factor	It is a necessary ligand for activation of c-JUN	Enhanced	43.52
8	c-JUN	Jun Proto-Oncogene, AP-1 Transcription Factor Subunit	Necessary for hepatic development associated with hepatoblasts	Enhanced	26.27
9	GSK3A	Glycogen Synthase Kinase 3 Alpha	Inhibits the induction of definitive endoderm by repressing c-Myc and Beta-catenin.	Repressed	4.52
10	GSK3B	Glycogen Synthase Kinase 3 Beta		Repressed	20.53

Table S3. Complete blood counts and blood enzyme analyses in controls and treated mice.

	Vehicle					TAA					CTX+TAA					
Mouse number	1	2	3	4	Ave	1	2	3	4	Ave	1	2	3	4	5	Ave
HCT (%)	50.14	48.97	44.55	48.49	48.04	55.95	61.11	31.73	54.13	50.73	47.99	59.82	50.42	27.91	53.79	47.99
HGB (g/dL)	18.33	23.34	22.64	19.97	21.07	10.9	11.9	9.35	15.76	11.98[A]	23.51	16.06	15.36	17.23	15.61	17.55[B]
MCH (pg)	17.71	23.05	25.41	19.64	21.45	19.96	14.69	15.33	15.1	16.27	24.32	13.15	15.95	15.78	15.09	16.86
MCHC (g/dL)	36.55	47.66	50.82	41.19	44.06	42.01	30.33	29.47	29.12	32.73	48.99	26.84	30.46	30.53	29.02	33.17
MCV (fL)	48	48	50	48	48.5	48	48	52	52	50	50	49	52	52	52	51
MPV (fL)	6.41	7.8	6.53	5.6	6.59	5.56	6.09	6.54	5.88	6.02	6.06	5.72	4.97	6.15	5.55	5.69
PLT (10^9/L)	80	139	159	964	333.5	969	457	131	265	455.5	392	400	865	98	348	420.6
RBC (10^12/L)	10.35	10.12	8.91	10.17	9.89	5.46	12.62	6.1	10.44	8.66	9.67	12.21	9.63	5.4	10.34	9.45
RDW-CV (%)	13.6	14.2	15.79	13.8	14.35	13.07	13.34	13.95	14.19	13.64	15.31	14.15	14.01	14.02	14.06	14.31
WBC (10^9/L)	1.78	1.97	2.89	3.91	2.64	1.87	5.42	3.97	3.05	3.58	3.14	4.47	4.3	10.33	3.01	5.05
WBC-EOS (%)	2.6	2	1.9	8.2	3.68	6.9	12	1.5	2.1	5.63	5.8	4.7	6.1	9.3	2.3	5.64
WBC-GRAN (%)	13.6	6.1	6.9	20.9	11.88	20	30.3	31.8	30.6	28.18[A]	26.6	20.1	31.8	35.8	27	28.26[A]
WBC-LYM (%)	81.7	90.1	90.3	75.4	84.38	75	64.9	52.5	60	63.1[A]	65.4	71.3	60.9	54.8	63.9	63.26[A]
WBC-MONO (#)	0	0	0	0.1	0.03	0	0.2	0.6	0.2	0.25	0.2	0.3	0.3	0.9	0.2	0.38
WBC-MONO (%)	4.7	3.8	2.8	3.7	3.75	5	4.8	15.7	9.4	8.73	8	8.6	7.3	9.4	9.1	8.48
ALT (U/L)	28	30	47	17	30.5	204	251	351	345	287.75[A]	1000	1000	1000	1000	1000	1000[B]
AST GOT (U/L)	128	69	169	57	105.75	397	430	600	547	493.5[A]	1000	1000	1000	1000	1000	1000[B]

[A, B] *P<0.05* (A: Compared vehicle with TAA, B: Compared TAA with CTX+TAA), Bold: significant CBC list

Table S4. Sources of somatic stem cells and their outcomes in terms of hepatic differentiation

MSC source	Coating material	Step 1	Step 2	Outcome	Reference
Human amnion stem cells	Gelatin	**PVA**, EGF, FGF2, HGF, Dexa, ITS, Nico, 5-aza, **Fasudil, CHIR**	OSM, HGF, HGF, Dexa, ITS, **Fasudil**	In vitro differentiation, In vivo transplantation	This study
Human adult liver-derived stem cells	Gelatin	FBS, HGF, FGF2, Nico, 5-aza	OSM, Dexa, ITS	In vitro differentiation, In vivo transplantation	Lee J, Choi J. et al. Cells (2020)
Human bone marrow stem cells	ECM Hydrogel, Matrigel	HGF, FGF2, Nico	OSM, Dexa, ITS	In vitro differentiation	X Wei. et al. J Biomed Master Res Part A (2018)
Human amniotic epithelial stem cells	Matrigel	FBS, EGF, FGF2, HGF, Dexa, ITS	FBS, EGF, OSM, HGF, Dexa, ITS	In vitro differentiation, In vivo transplantation	Liu, Q. et al. Stem Cell Res Ther (2018)
Human umbilical cord matrix stem cells	Type I collagen	FBS, EGF, FGF2, HGF, ITS	OSM, Dexa, ITS	In vitro differentiation, In vivo transplantation	Campard, D. et al. Gastroenterology (2008)
Human adipose tissue-derived stem cells	Type I collagen	BSA, EGF, FGF1, FGF4, HGF	OSM, Dexa	In vitro differentiation, In vivo transplantation	A, Banas. et al. Hepatology (2007)

Fig. S1

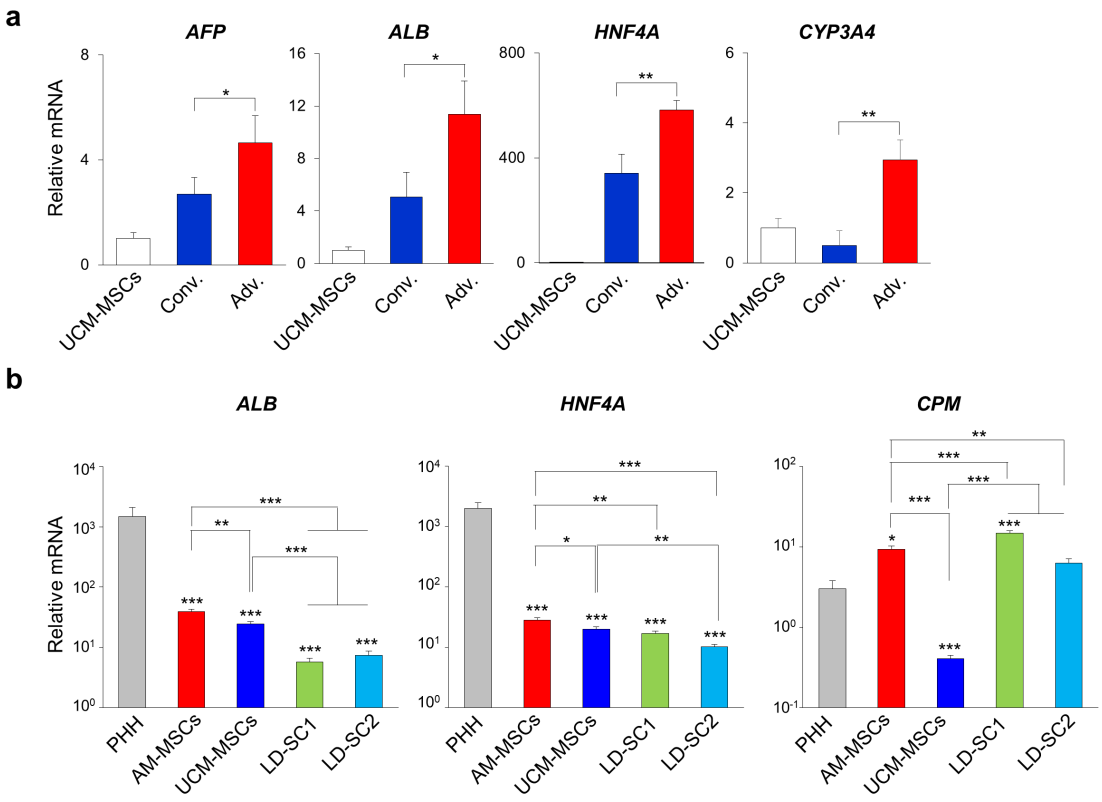
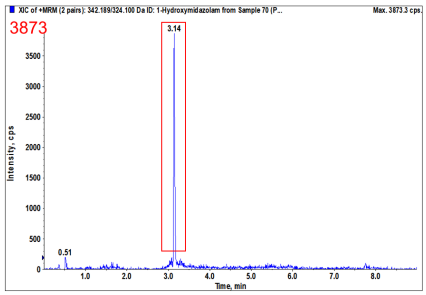
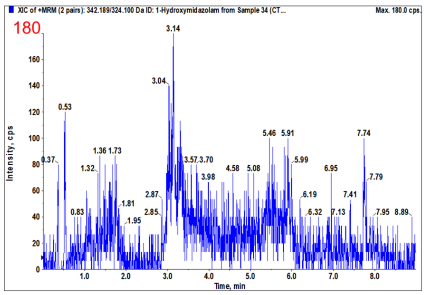

a
AFP
ALB
HNF4A
CYP3A4
Relative mRNA
UCM-MSCs
Conv.
Adv.
b
ALB
HNF4A
CPM
Relative mRNA
PHH
AM-MSCs
UCM-MSCs
LD-SC1
LD-SC2

Fig. S2

PHH



AM-MSCs



AM-HLCs

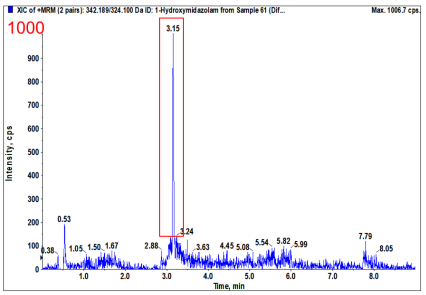
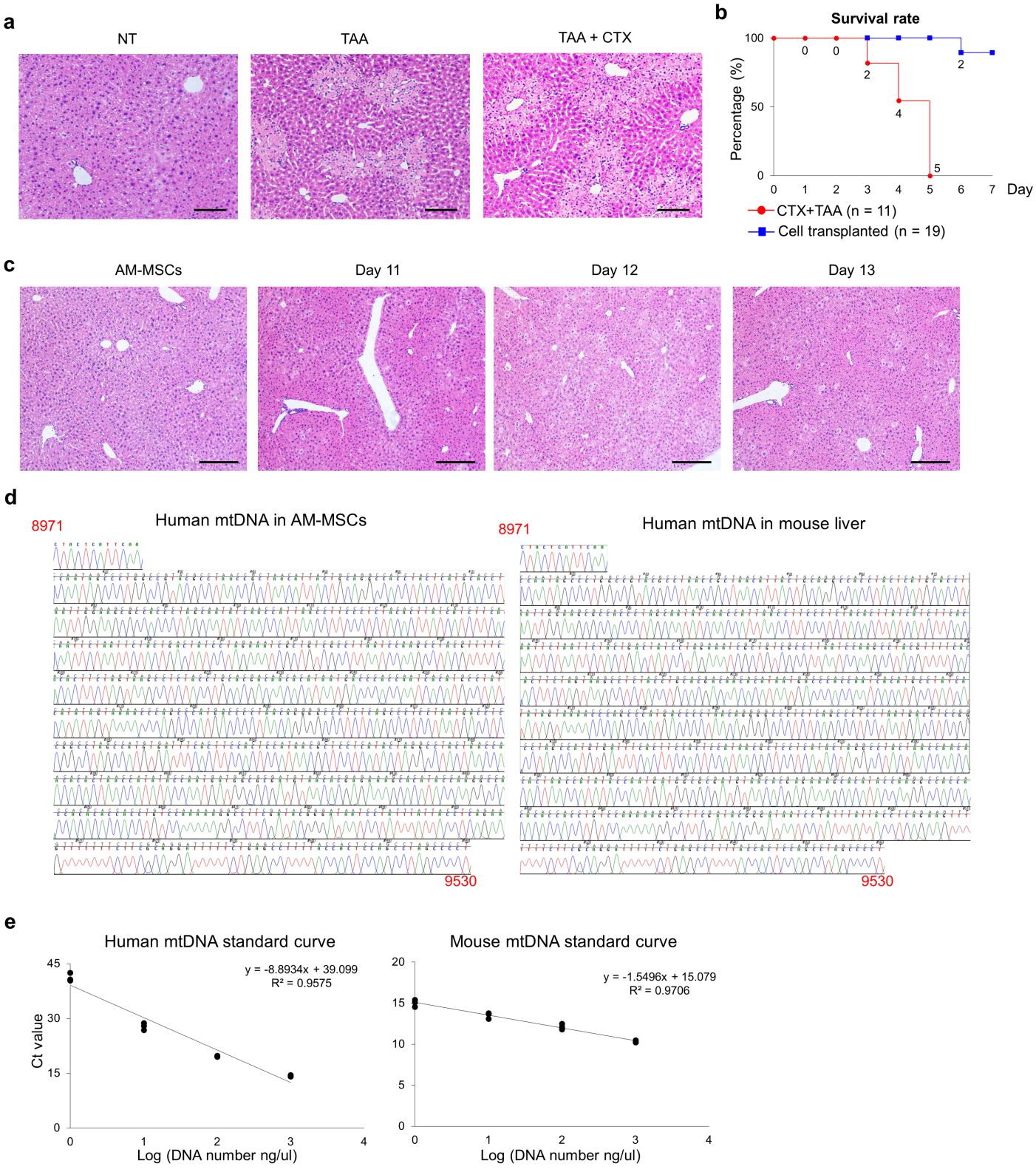


Fig. S3


a
NT
TAA
TAA + CTX
b
Survival rate
Percentage (%)
100
50
0
0 1 2 3 4 5 6 7 Day
0 0 2 4 5 2
CTX+TAA (n = 11)
Cell transplanted (n = 19)
c
AM-MSCs
Day 11
Day 12
Day 13
d
8971
Human mtDNA in AM-MSCs
9530
8971
Human mtDNA in mouse liver
9530
e
Human mtDNA standard curve
y = -8.8934x + 39.099
R² = 0.9575
Ct value
45
30
15
0
0 1 2 3 4
Log (DNA number ng/ul)
Mouse mtDNA standard curve
y = -1.5496x + 15.079
R² = 0.9706
20
15
10
5
0
0 1 2 3 4
Log (DNA number ng/ul)