Supplementary figure legends

Supplementary Figure 1. Double immunostaining of normal mouse liver sections for AKAP12 and other cell type markers. (a) Double immunostaining for AKAP12 with markers for portal fibroblasts (Des, top row; PDGRFa, second row) and endothelial cells (CD31, third row), and bile duct epithelium (EpCAM, bottom row) reveals that AKAP12-positive cells in portal area are portal fibroblasts while they are rarely colocalized with bile duct epithelium or portal vein endothelium. (b) Double immunostainings for AKAP12 with sinusoidal basement membrane marker collagen type IV (ColIV) and HSC marker desmin (Des) indicate that HSCs are negative for AKAP12. Scale bars represent 50um.

Supplementary Figure 2. Liver sinusoids of AKAP12 KO mice have reduced number of fenestrae in normal condition and DDC diet leads to reduction of AKAP12 expression. (a) Representative scanning electron microscopy of WT and AKAP12 KO liver sinusoids and a graph showing the numbers of fenestrae per unit vascular area. n=18-20 SEM images from 2 mice per genotype. Scale bar, 1um. Data are expressed as means±SEM. **P<0.01. (b) DDC challenge for 3 weeks results in ECM accumulation around portal track while AKAP12 expression is reduced. **P<0.01. Scale bars indicate 500um in Sirius Red image and 100um in AKAP12 staining. (c) Biliary tree (BT) and non-parenchymal cells (NPCs) are isolated after intrahepatic collagenase perfusion and AKAP12 expression was determined by Western blot. Note that 3 weeks of DDC diet (DDC 3W) leads to reduced AKAP12 expression in both BT and NPCs samples.

Supplementary Figure 3. Serum levels of liver enzymes in AKAP12 KO mice are comparable to WT mice. ALT (a), AST (b) and ALP (c) levels in serum of WT or AKAP12 KO mice after normal diet (ND), DDC diet 3 weeks (DDC 3W) or DDC 3 weeks followed by normal diet for 2 weeks (RES 2W) were measured. n=5-6 mice per group.

Supplementary Table 1. The clinical information of human subjects included in this study

	Normal	HBV	HCV	NBNC
All (n)	4	8	8	8
Sex (males)	2 (50%)	5 (62.5%)	5 (62.5%)	2 (25%)
Age (years)	25±6	51.4±13.6	57.5±13.5	56.9±13.1
Fibrosis grade (0/1/2/3/4)	4/0/0/0/0	0/2/2/2/2	0/2/2/2/2	0/2/2/2/2

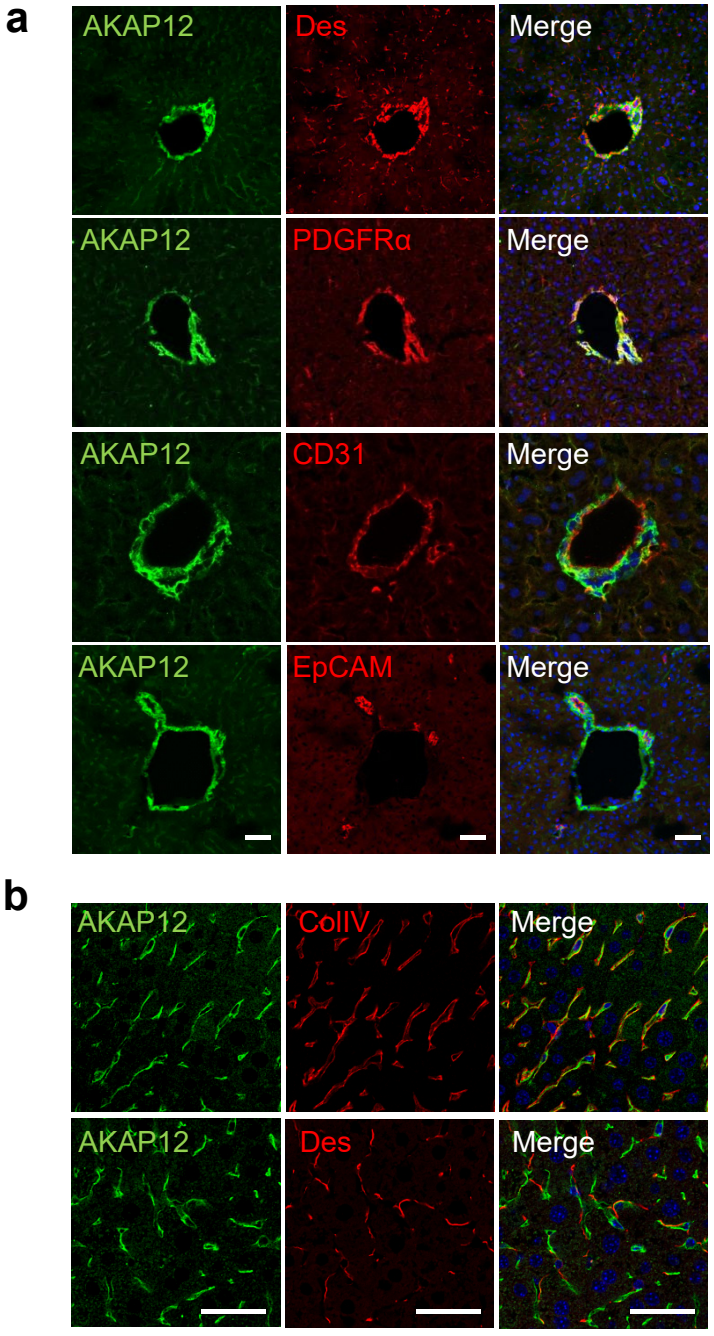
Supplementary Table 2. Primer sequences for qPCR detection

mouse primers

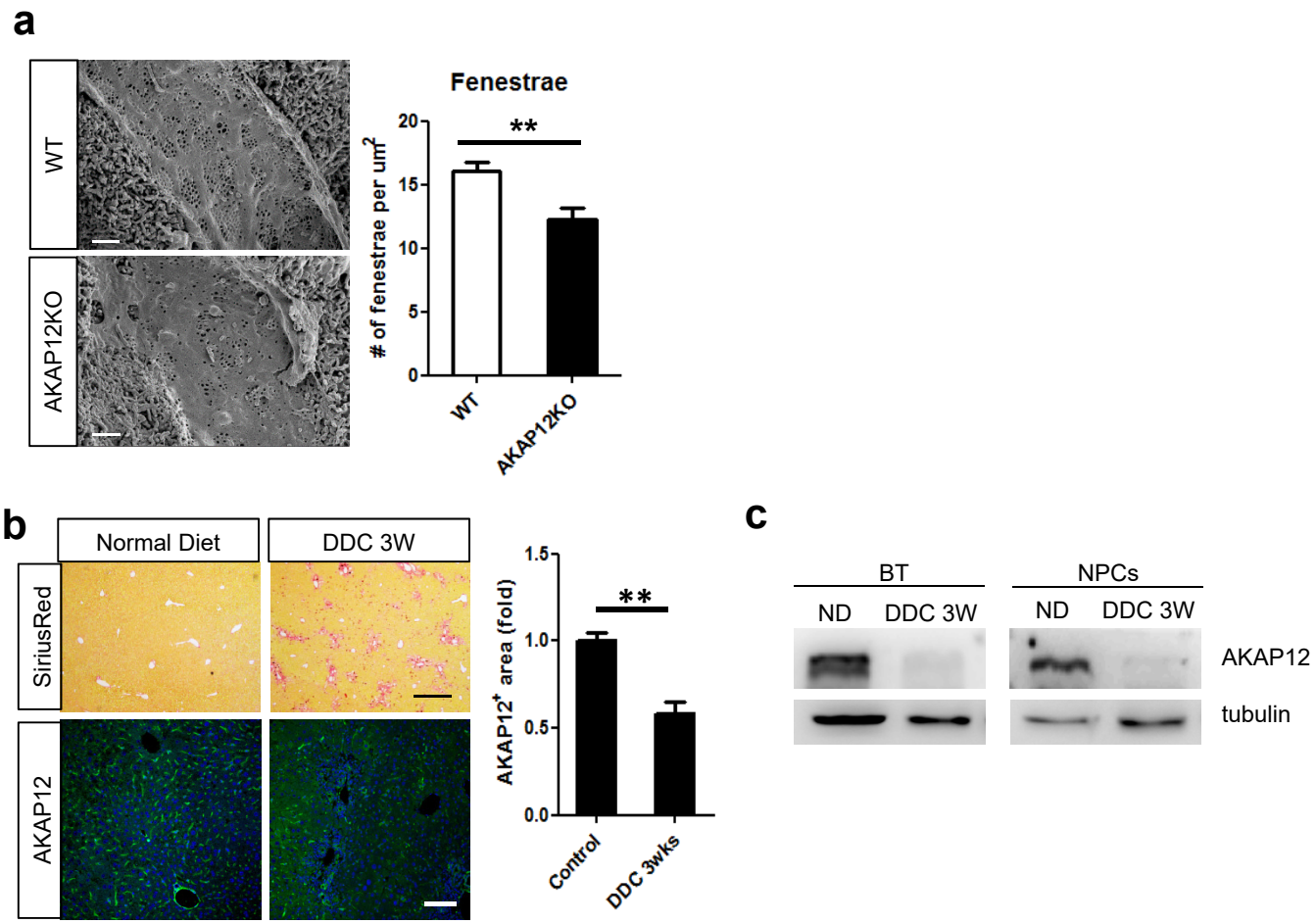
Gene		Sequences (5'->3')
col1a1	sense	CATGTTCAGCTTTGTGGACCT
	antisense	GCAGCTGACTTCAGGGATGT
col3a1	sense	TCCCCTGGAATCTGTGAATC
	antisense	TGAGTCGAATTGGGGAGAAT
col15a1	sense	GATTTACGGGTTCCATACAA
	antisense	GACTTCATCCATCTCCTGAA
αSMA	sense	GACACCACCCACCCAGAGT
	antisense	ACATAGCTGGAGCAGCGTCT
fibulin1	sense	ACGGCCGGTCTTGTGAAGAT
	antisense	TCGTCGGCAATAGCACTGGT
elastin	sense	GGGCCCTGGTATTGGAGGTC
	antisense	ACTCCACCTCTGGCTCCGTA
vWF	sense	AGACACAGTGAAGATTGGCT
	antisense	GGAACAGGTACTTGAGTCCA
ET-1	sense	GGCAGGACCAGCATCCTTGA
	antisense	GAGGCAGAAAGGCACTCGCT
hgf	sense	CACCACACCGGCACAAGTTC
	antisense	CCCAAGTGGTGTCAGGGTCA
wnt2	sense	GGACGTGCACACATGCAAGG
	antisense	ACCCAGAGGTCCAGTGTCCT
vegf-a	sense	TTACTGCTGTACCTCCACC
	antisense	ACAGGACGGCTTGAAGATG
pde4a	sense	TGAGCTCACCTTGGAGGAAG
	antisense	ATCATGTGGAGCCAGGAGAG
pde4b	sense	GCTCAAGCCTGAACAACACA
	antisense	GTTCAGGTCTTCCAGCTCCT
pde4c	sense	GGGTCCAGACAGATCAGGAG
	antisense	GCTCAGCCACTTTGAACACA
pde4d	sense	GCGTGGCATGGAGATAAGTC
	antisense	CGTCTCCCAGAGTGGATGAA
akap12	sense	GTCTGGAATGCAGGATGAGG
	antisense	GATCCGACACAAATCAACGC
gapdh	sense	TGAACGGGAAGCTCACTGG
	antisense	TCCACCACCCTGTTGCTGTA

human primers

Gene		Sequences (5'->3')
ET-1	sense	GACATCATTTGGGTCAACACTC
	antisense	GGCATCTATTTTCACGGTCTGT
lama1	sense	CAGACTTTGGATGAAGATTTCC
	antisense	AGTTCAAGGGTGGCATTTTG
lama5	sense	AACAACTTCGCCGAGGGCTG
	antisense	AGTGGGTTCCCAAAGAATCC
akap12	sense	CAGAAGTCAGAGCAAGTGCC
	antisense	ACCTGAGGGGGAACATTTGA
18S rRNA	sense	GTAACCCGTTGAACCCCATT
	antisense	CCATCCAATCGGTAGTAGCG


a
AKAP12
Des
Merge
AKAP12
PDGFRα
Merge
AKAP12
CD31
Merge
AKAP12
EpCAM
Merge
b
AKAP12
ColIV
Merge
AKAP12
Des
Merge

Lee et al., Supplementary Figure 2



Lee et al., Supplementary Figure 3