Supplemental Figure 1. . Autophagy is upregulated in human stellate cells after liver injury *in vivo* and in primary human fibroblasts from patients with idiopathic pulmonary fibrosis

(**A**) Immunoblots of human stellate cells isolated from 2 HBV infected livers and 2 non-infected controls. (**C**) Immunoblots of fibroblasts from 3 non-fibrotic lungs (NF) and 3 from idiopathic pulmonary fibrosis (IPF) lungs. (**A,C**) HBV and IPF cells displayed an increase in LC3 conversion, decrease in P62, and (**B**) a statistically significant increase in AV number on EM analysis. AV, autophagic vacuole. Arrows indicate AV. *Right*: Electron micrograph quantification of AV number per 100 cells (**P<0.001. Error bars s.e.m.). Protein ratios (normalized to GAPDH) were used to quantify fold change relative to control, and are shown below each blot.

Supplemental Figure 2. 3MA blocks autophagy in stellate cells. Effect of 3MA treatment on autophagy levels in JS1 mouse stellate cells: (**A**) Immunoblots showing an increase in P62. (**B**) Electron micrographs demonstrating a decreased number of AV in 3MA treated cells and AV quantification per hundred cells (**P<0.001. Error bars, s.e.m.).Arrows indicate AV.

Supplemental Figure 3. Chloroquine (CQ) blocks autophagy in stellate cells. Effect of CQ treatment on autophagy levels in JS1 cells (**A,B**) Immunoblots demonstrating accumulation of LC3-II and increase in P62. (**C**) Electron micrographs showing impairment in AV degradation leading to accumulation of AV in different stages. Arrows indicate AV. *Right*: AV quantification per hundred cells (**P<0.001. Error bars, s.e.m.). Protein ratios (normalized to tubulin) were used to quantify fold-change relative to control, and are shown below each blot. Data represent the mean value of at least 3 experiments (*P<0.05).

Supplemental Figure 4. Autophagy is attenuated in stellate cells by silencing *Atg7*. (A,B) JS1 cells were transduced with either empty lentiviral vector (VEC) or vector expressing shRNA to the essential autophagy gene *Atg7* (si*Atg7* cells). (**A**) Immunoblots demonstrating a decrease in ATG7 expression at different time points, corresponding to decreased LC3II levels and collagen I. Data represent the mean value of at least 3 experiments (*P<0.05). Protein ratios (normalized to tubulin) were used to

quantify fold-change relative to control, and are shown below each blot. Data represent the mean value of at least 3 experiments (*P<0.05).
(**B**) EM demonstrating a decrease in AV number in si*Atg7* cells (**P<0.001. Error bars, s.e.m.). Arrows indicate AV *Right*: AV quantification per hundred cells (**P<0.001. Error bars, s.e.m.).

Supplemental Figure 5. Treatment with chloroquine in stellate cells decreases fibrogenesis. CQ treatment decreases (**A**) *Col 1*α*1, Col 1*α*2,* α-*sma, Mmp2* and β-*Pdgfr* mRNA (quantitative RT-PCR analysis) and (**B**) protein expression (immunoblot). (*P<0.05, **P<0.001. Error bars, s.e.m.). Protein ratios (normalized to GAPDH) were used to quantify fold-change relative to control, and are shown below each blot. Data represent the mean value of at least 3 experiments (*P<0.05).

Supplemental Figure 6. Autophagy is attenuated in stellate cells by silencing *Atg5*. JS1 cells were transduced with either empty lentiviral vector (VEC) or vector expressing an shRNA to the essential autophagy gene *Atg5* (si*Atg5* cells). (**A**) Immunoblots showing decreased ATG5 expression corresponding to a decrease in LC3II levels. siAtg5 cells display a decrease in (**B**) *Col 1*α*1, Col 1*α*2,* α-*sma, Mmp2* and β-*Pdgfr* mRNAs (quantitative RT-PCR analysis) and (**C**) COL 1, α-SMA, β-PDGFR and MMP2 protein expression (immunoblot). (*P<0.05, **P<0.001. Error bars, s.e.m.). Protein ratios (normalized to tubulin) were used to quantify fold-change relative to control, and are shown below each blot. Data represent the mean value of at least 3 experiments (*P<0.05).

Supplemental Figure 7. Treatment with 3MA in human stellate cells and pulmonary fibroblasts decreases fibrogenesis. Primary human stellate cells as well as primary pulmonary fibroblasts both obtained from healthy individuals were treated with 3MA for 24 hours. 3MA treatment decreases *COL 1,* α-*SMA* and β-*PDGFR* protein expression (immunoblot) in (**A**) human stellate cells and (**B**) human pulmonary fibroblasts. Protein ratios (normalized to GAPDH) were used to quantify fold-change relative to control, and are shown below each blot. Data represent the mean value of at least 3 experiments (*P<0.05).

Supplemental Figure 8. Atg5 KO mice embryonic fibroblasts and 3MA treated

mouse mesengial have reduced fibrogenesis. (A) MEFs from *Atg5* KO mice, compared with MEFs from WT mice, display a decrease in COL 1, α-SMA, β-PDGFR and MMP2 protein expression (immunoblot). **(B)** 3MA treatment decreases COL 1, αSMA and β-PDGFR protein expression (immunoblot) in mesangial cells. (**C**) genetic knockdown of *Atg*7 in mesangial cells decreases COL 1 and α-SMA. Protein ratios (normalized to GAPDH) were used to quantify fold-change relative to control, and are shown below each blot. Data represent the mean value of at least 3 experiments (*P<0.05).

Supplemental Figure 9. *Atg7F/F-GFAP-cre* mice characterization. (**A**) immunoblot showing Atg7 expression in HSCs isolated from *Atg7F/F-GFAP-cre and Atg7F/F* mice.(**B**) Immunoblot showing expression of CRE recombinase in stellate cells from *Atg7F/F-GFAP-cre* mice compared to their *Atg7F/F* littermates. (**C**) Atg7 mRNA (quantitative RT-PCR analysis) levels in HSCs isolated from *Atg7F/F-GFAP-cre* and *Atg7F/F* mice. (**D**) Whole liver Atg7 immunohistochemistry in *Atg7F/F-GFAP-cre* and *Atg7F/F* mice. (*P<0.05, **P<0.001. Error bars, s.e.m.). Protein ratios (normalized to tubulin) were used to quantify fold-change relative to control, and are shown below each blot. Data represent the mean value of at least 3 experiments (*P<0.05).

Supplemental Figure 10. Blocking autophagy in stellate cells does not amplify liver injury. (**A**) H&E staining of whole liver from untreated *Atg7F/F-GFAP-cre* and *Atg7F/F mice.* Representative data from an experiment performed in a total of 18 animals, 9 $Atg7^{F/F}$ and 9 $Atg7^{F/F}$*-GFAP-cre*. (**B**) Liver to body weight ratio after CCl_4-induced chronic liver injury. Results are shown as mean ± s.e.m. (*P<0.05). (**C**) Measurement of aspartate aminotransferase (AST) and alanine aminotransferase (ALT) and level. (Error bars, s.e.m.). A total of 10 animals, 5 $Atg7^{F/F}$ and 5 $Atg7^{F/F}$*-GFAP-cre* were used.

Supplemental Figure 11. Loss of stellate cell autophagy attenuates fibrosis in vivo. Whole liver sections after chronic liver injury with TAA were stained for Sirius red. Right: quantification of Sirius red positive area. A total of 10 animals, 5 $Atg7^{F/F}$ and 5 $Atg7^{F/F}$*-GFAP-cre* were treated with 4 doses TAA i.p. every other day. (*P<0.05, **P<0.001. Error bars, s.e.m.).

Supplemental Figure 12. . Triglyceride content is increased in autophagy-deficient stellate cells. (**A**) 3MA treated JS1 cells, (**B**) siAtg7 cells (levels are expressed in µg triglyceride per 10^6 cells). (*P<0.05, **P<0.001. Error bars, s.e.m.).

Figure 13. Inhibition of autophagy in stellate cells leads to LD accumulation associated with increased expression of adipose differentiation related protein (ADRP). Oil red O (ORO) staining in stellate cells isolated from *Atg7*F/F and *Atg7F/F-GFAP-cre* mice (**A**) plated for 24 hours, or (**B**) activated in vivo with 3 doses of CCl_4 and briefly plated (48 hours) (n=6); (**C**) ORO stained area quantified using Image J software. **(D)** Electron micrographs showing lipid droplet content and **(E)** immunoblots for ADRP in isolated stellate cells. Representative data from an experiment performed in a total of 10 animals, 5 $Atg7^{F/F}$ and 5 $Atg7^{F/F}$-*GFAP-cre*.