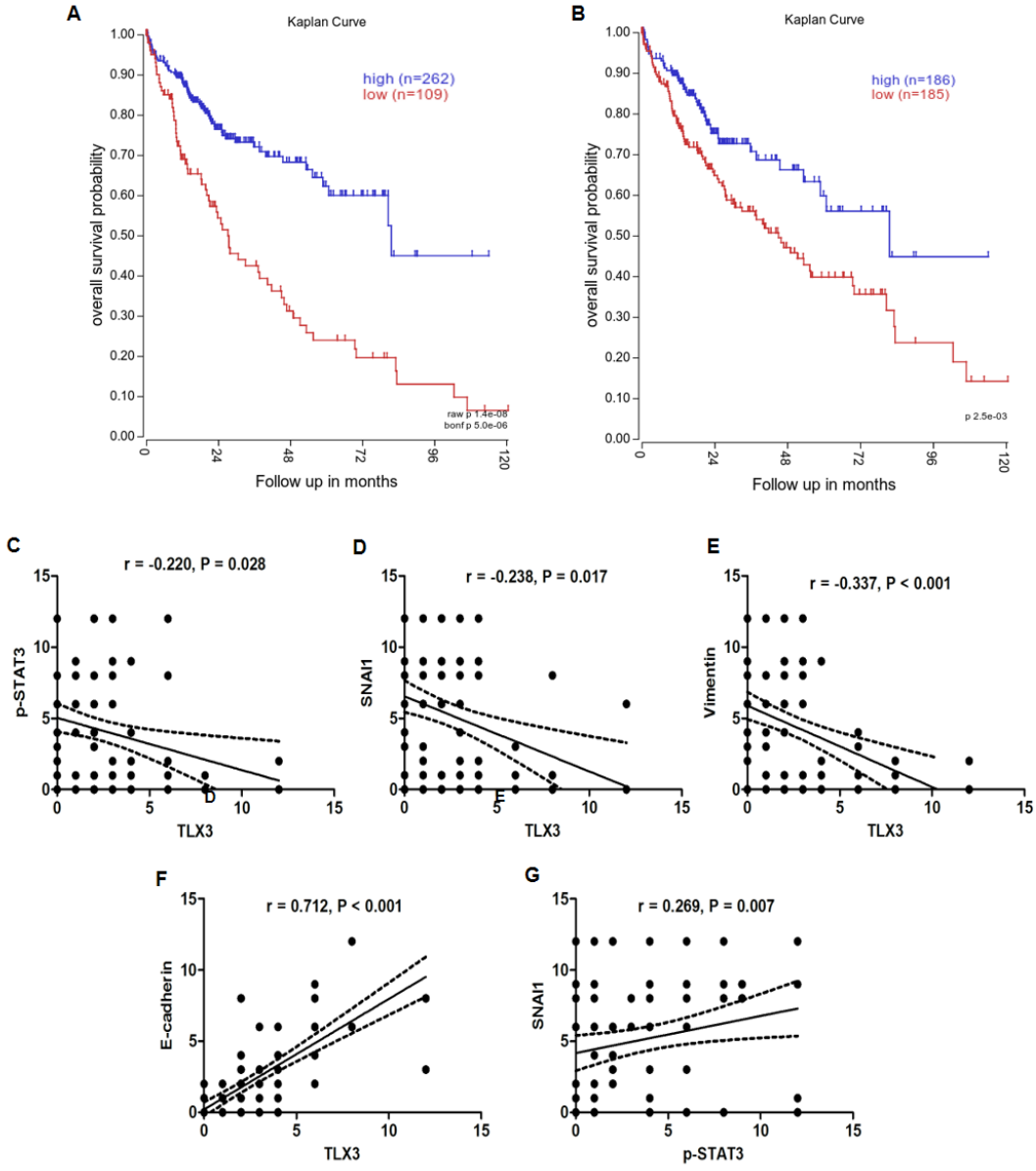
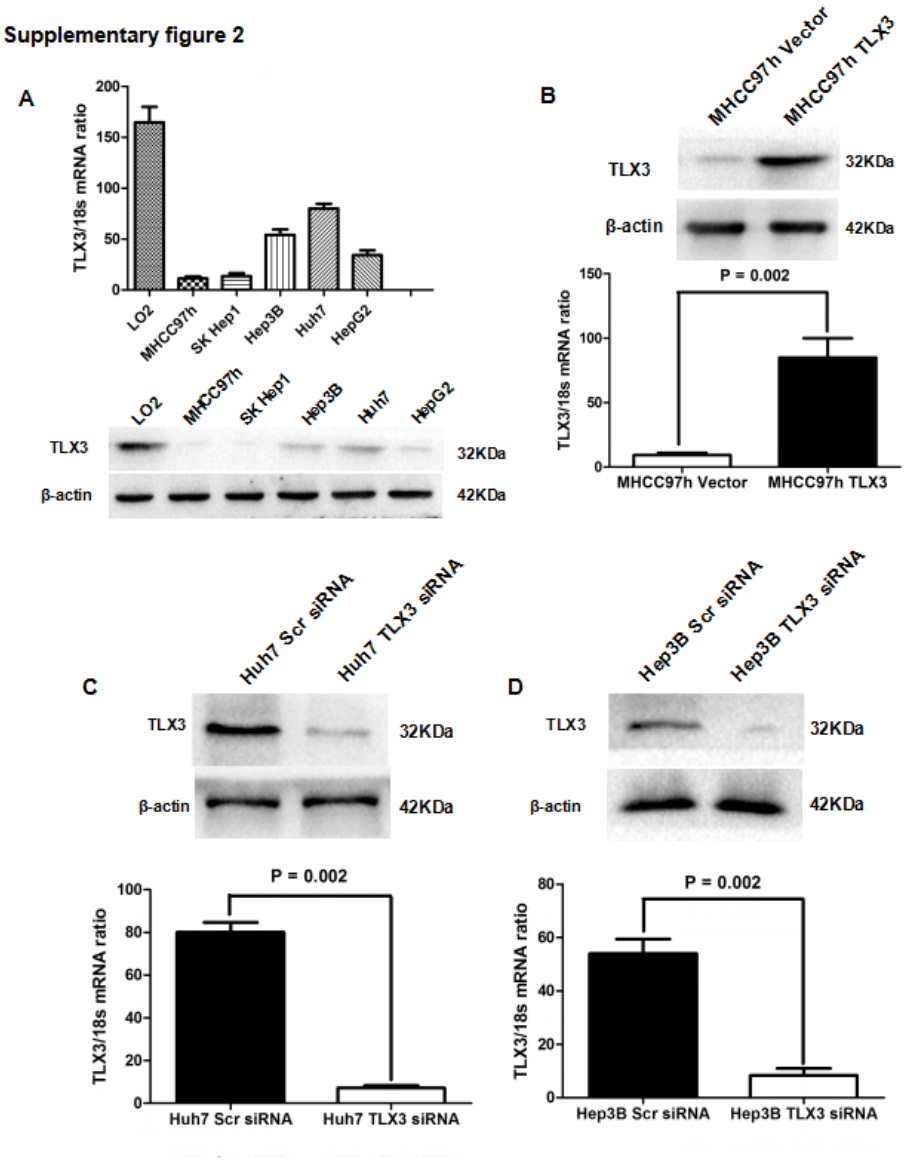
Supplementary fig 1



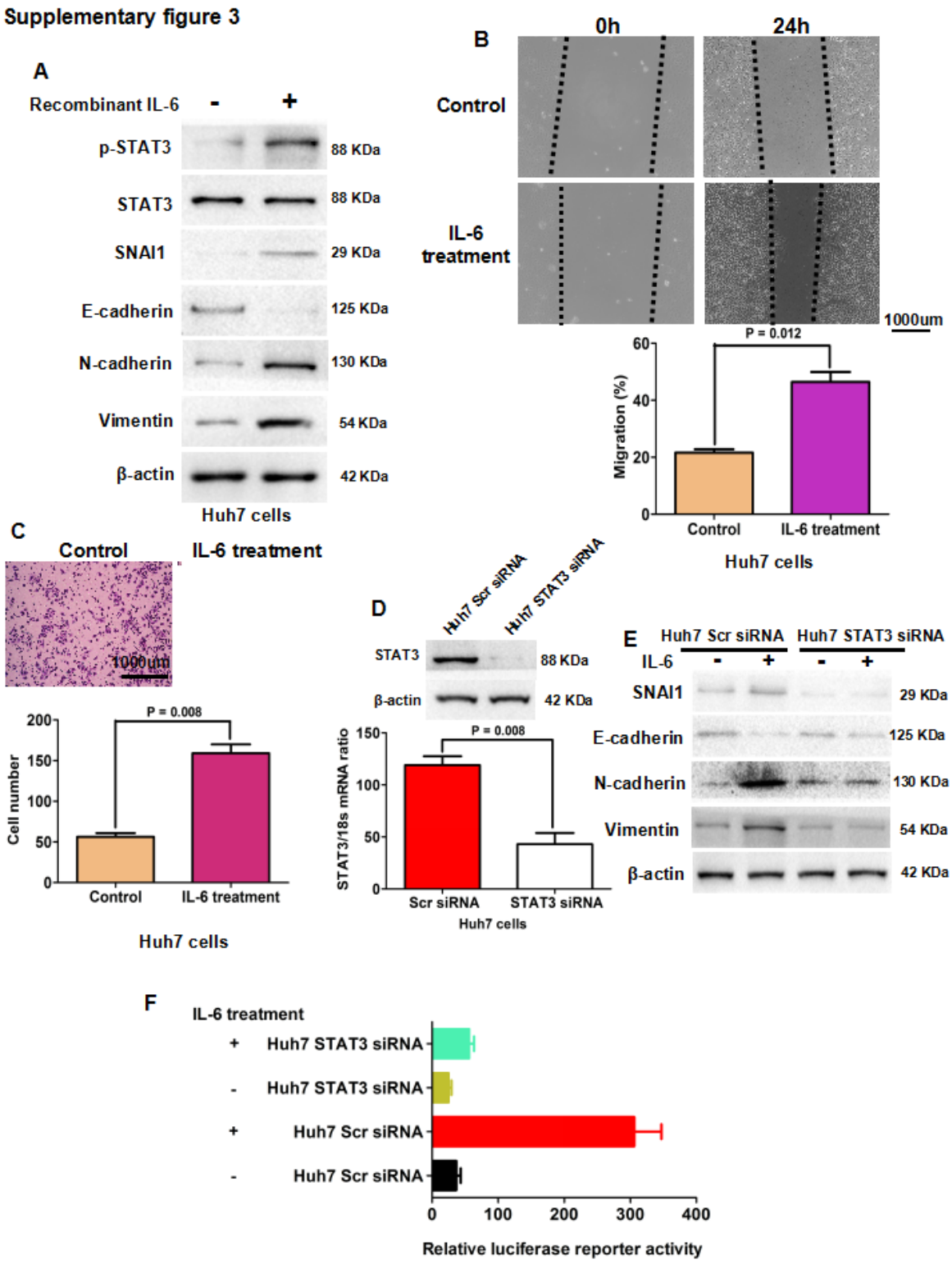
Supplementary fig.1 The relationship between TLX3 expression and survival in HCC was analyzed in TCGA database. (A) Using the ratio of TLX3 expression in HCC/adjacent liver tissues as the cut-off value, HCC patients with lower TLX3 expression in HCC tissues than adjacent liver tissues suffered from the unfavorable survival compared to those with higher TLX3 expression (P = 1.4 e-8). (B) Using the median value of TLX3 expression in HCC tissues as the cut-off value, HCCs with higher TLX3 in HCC tissues had the better

survival (P = 2.5 e-03). The results of IHC staining on HCC specimens were analyzed by Spearmen test and it was found that TLX3 expression was associated negatively with the expression of p-STAT3 (C), SNAI1 (D) and Vimentin (E) and positively with E-cadherin expression (F). And there was also positively correlation found between p-STAT3 and SNAI1 in HCC tissues (G).



Supplementary fig.2 By both qRT-PCR and Western immunoblotting assays, it was displayed that TLX3 expression in 5 kinds of HCC cell lines was significantly less than normal liver cell line (LO2) (A); Transfection with TLX3 expressing plasmid was verified to result in increase of TLX3 expression in MHCC97h cells by both qRT-PCR and Western immunoblotting assays (B); Additionally, qRT-PCR and Western immunoblotting assays

also confirmed that transfection of siRNA sequences against TLX3 abolished TLX3 expression in both Huh7 (C) and Hep3B cells (D) successfully.



Supplementary fig.3 Western immunoblotting assay showed that IL-6 treatment leaded to increased expression of SNAI1, N-cadherin and Vimentin and repression pf E-cadherin accompanied with increased phosphorylation of STAT3 (A); As assessed by wound

healilng assay, IL-6 treatment amplified migration ability of Huh7 cells (B); Transwell assay also demonsrated that IL-6 resulted in up-regulation of invasion capacity of Huh7 cells (C); Transfection of siRNAs targeting STAT3 abrogated STAT3 expression in Huh7 cells successfully (D); Western immunoblotting assay revealed that IL-6 treatment did not impact the expression of EMT bio-markers including SNAI1, E-cadherin, N-cadherin and Vimentin any more (E); The luciferase reporter assay confirmed that IL-6 treatment gave rise to notable up-regulation of SNAI1 promoter activity, which was revoked by knockdown of STAT3 in Huh7 cells (F).

Table 1 The relationship between TLX3 expression in tumor tissues and clinical characteristics in 100 HCC cases.

Clinicopathological features		No.	No. of Patients		x^2	P
			Lower TLX3 in HCC	High TLX3 in HCC		
Age (years)	< 50	44	30	14	0.568	0.451
	≥ 50	56	42	14		
Gender	Male	54	39	15	0.003	0.957
	Female	46	33	13		
HBV infection	Present	87	67	20	8.337	0.004
	Absent	13	5	8		
Serum AFP level (ng/mL)	< 400	26	17	9	0.763	0.383
	≥ 400	74	55	19		
Tumor diameter (cm)	< 5	55	44	11	3.880	0.049
	≥ 5	45	28	17		
Liver cirrhosis	Present	86	66	20	6.858	0.009
	Absent	14	6	8		
Edmondson-Steiner Classification	I + II	30	17	13	4.998	0.025
	III + IV	70	55	15		
TNM stage	I + II	69	45	24	5.079	0.024
	III + IV	31	27	4		

Portal vein	Present	21	20	1		
					7.120	0.008
invasion	Absent	79	52	27		
Intra-hepatic	Present	16	15	1		
					4.470	0.035
metastases	Absent	84	57	27		