

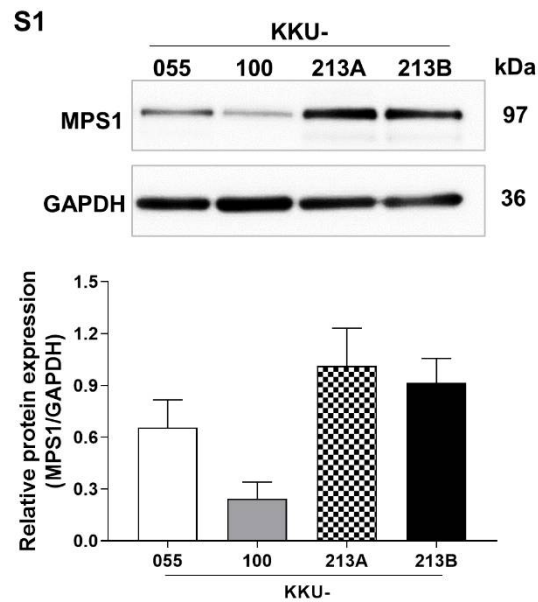
Supplementary Table S1 MPS1 expression and clinicopathological features of CCA patients from GEPIA and GEO databases

Characteristics	GEPIA (TCGA-CHOL)				GEO (GSE89749)			
	MPS1 expression				MPS1 expression			
	No. of patient	Negative (<7)	Positive (≥7)	<i>P</i> -value	No. of patient	Negative (<7.8)	Positive (≥7.8)	<i>P</i> -value
Gender	36				91			
Female	20	8	12	0.179	42	19	23	0.722
Male	16	10	6		49	24	25	
Age	36				91			
<57	18	9	9	0.999	42	20	22	0.948
≥57	18	9	9		49	23	26	
Tumor type					91			
Intrahepatic		N/A	N/A		63	35	28	0.017
Extrahepatic		N/A	N/A		28	8	20	
Histological type					87			
Papillary		N/A	N/A		19	6	13	0.099
Non-Papillary		N/A	N/A		68	36	32	
Ov infection					91			
Positive		N/A	N/A		43	12	31	<0.001
Negative		N/A	N/A		48	31	17	
Lymph node invasion (N)	31				81			
N0	26	14	12	0.333	56	26	30	0.59
N1	5	1	4		25	10	15	
T stage	36				91			
T1-T2	31	16	15	0.629	33	16	17	0.178
T3-T4	5	2	3		58	27	31	
M stage	33				90			
M0	28	15	13	0.576	85	41	44	0.72
M1	5	2	3		5	2	3	
Pathological Staging	36				84			
I-III	29	16	13	0.285	52	25	27	0.94
IVA	2	0	2		27	13	14	
IVB	5	2	3		5	2	3	

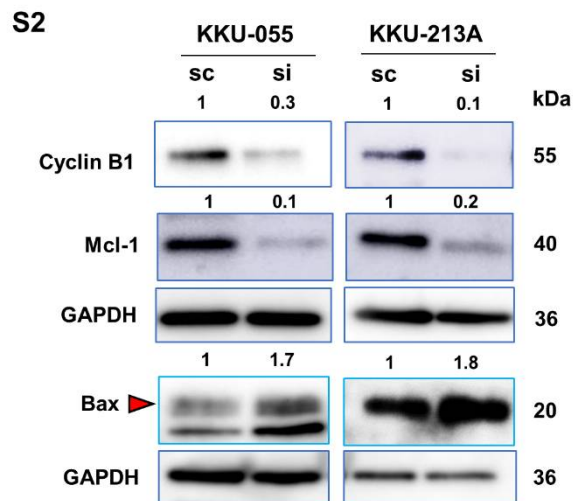
N/A = not available

Supplementary Table S2 MPS1 expression and clinicopathological features of 185 CCA patients

Characteristics	MPS1 expression			<i>P</i> -value
	No. of patient	Negative (H-score = 0)	Positive (H-score > 0)	
Gender	185			
Female	62	40	22	0.496
Male	123	73	50	
Age	183			
<57	83	47	36	0.247
≥57	100	65	35	
Tumor type	185			
Intrahepatic CCA (iCCA)	175	103	72	0.320
Extrahepatic CCA (eCCA)	10	8	2	
Histological type	177			
Papillary	88	51	37	0.406
Non-Papillary	89	57	32	
Lymph node invasion (N)	168			
N0	83	54	29	0.405
N1	85	50	35	
Tumor size (cm)	185			
<7 cm	132	77	55	0.301
≥7 cm	51	34	17	
Tumor stage	185			
I-III	117	77	40	0.113
IVA	53	30	23	
IVB	15	6	9	



Supplementary Figure S1. MPS1 protein expression in four CCA cell lines. Western blot result shows MPS1 protein expression in KKU-055, KKU-100, KKU-213A and KKU-213B CCA cell lines. Bar graph represents the relative protein expression of MPS1 which was normalized to GAPDH.



Supplementary Figure S2. The expression of Cyclin B1, Mcl-1 and Bax after MPS1 knockdown in CCA cell lines. The protein expression was normalized to GAPDH. The relative fold change to scramble control (sc) was quantified and indicated by the numbers above the corresponding panels.