

Figure S1. Images of the patients. Computed tomography scan images of liver cancer patients before and following TACE. The arrow points to the tumor. TACE, transarterial chemoembolization; prior TACE, prior to TACE treatment; TACE1, after the first TACE operation; TACE2, after the second TACE operation.

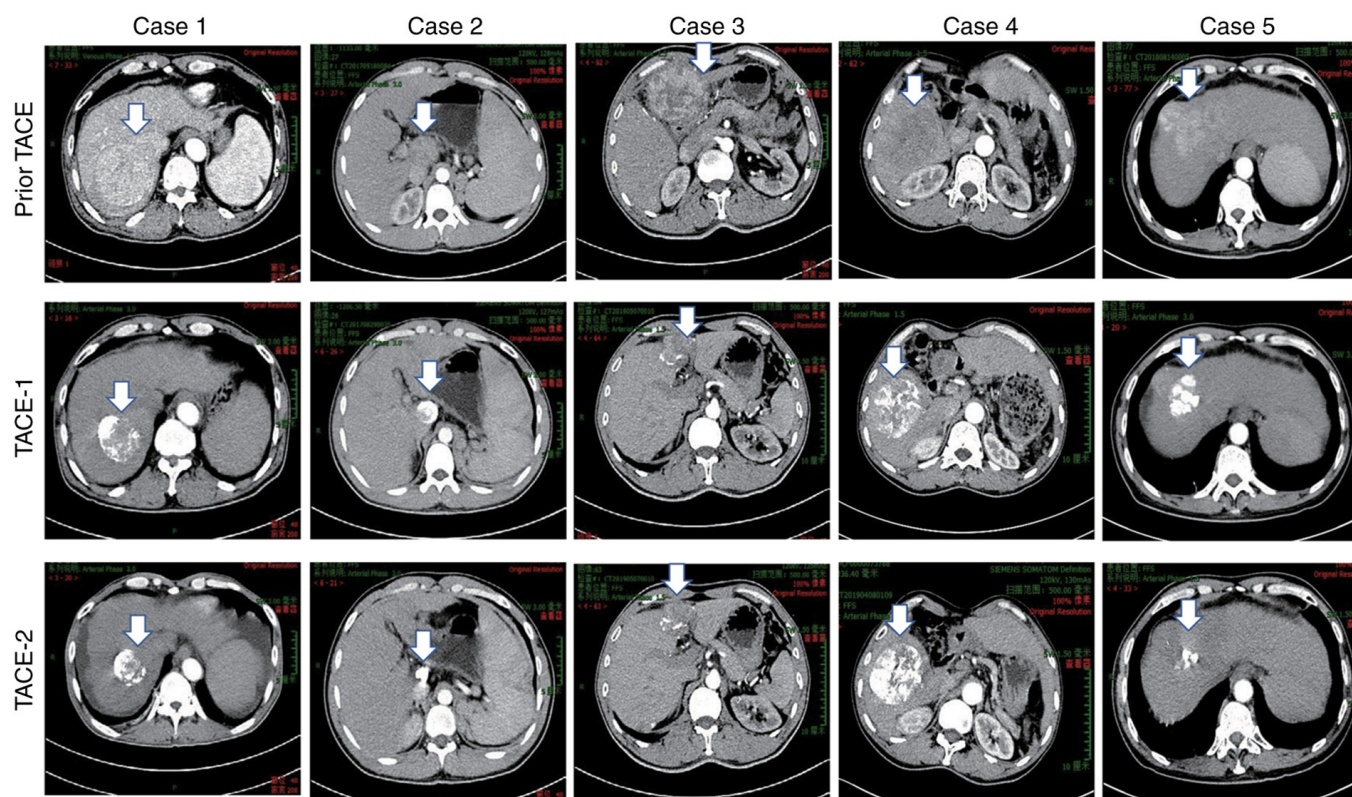


Figure S2. Changes of circRNAs and mRNAs in patients before and after TACE treatment (A) Circ-G004213 expression in blood of patients with LC. (B) RT-qPCR detection of circ_GABRG3 expression in blood of patients with LC. (C) Circ-G004213 target mRNAs (PRPF39 and ZWINT), which were positive with the prognosis of LC. (D) Circ-G004213 target mRNAs (GINS2, ZIC2, DR1 and CREB3L3), which were negative with the prognosis of LC. *P<0.05 and NS vs. the corresponding samples of the prior TACE group. Data are presented as means \pm SEM of at least three independent experiments. LC, liver cancer; RT-qPCR, reverse transcription-quantitative PCR; NS, no significant difference; TACE, transarterial chemoembolization; prior TACE, prior to TACE treatment; TACE1, after the first TACE operation; TACE2, after the second TACE operation.

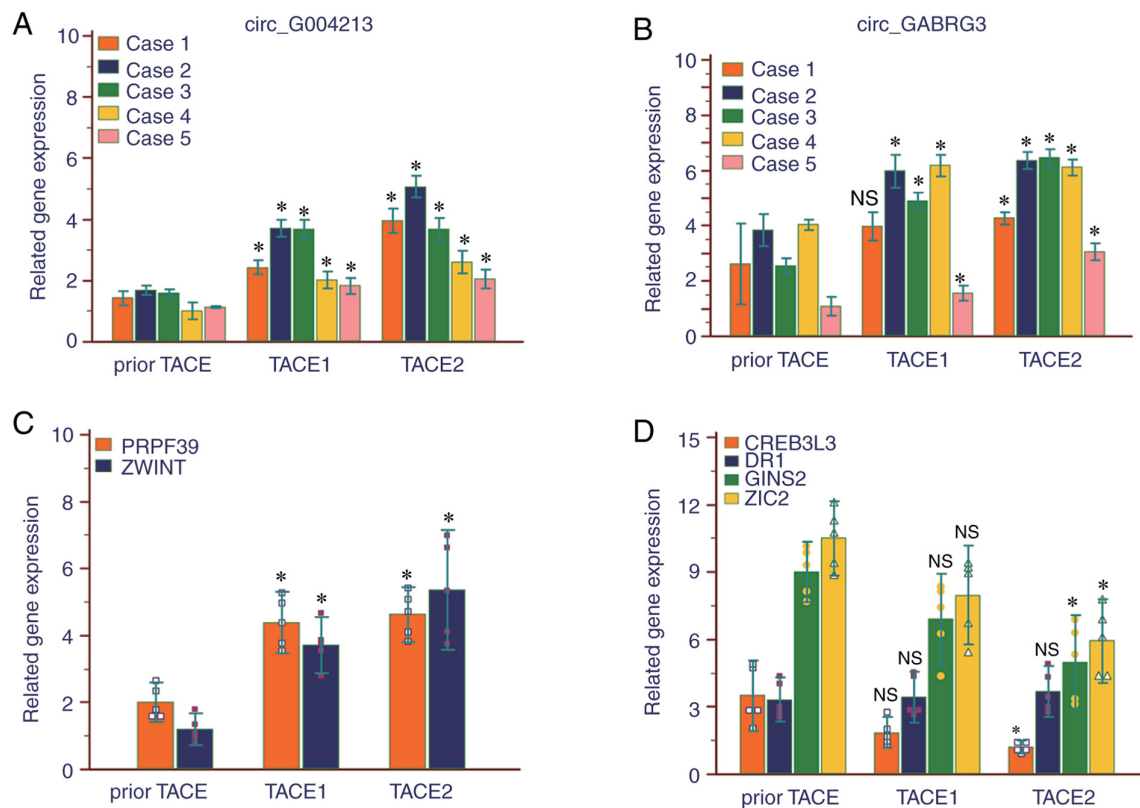


Figure S3. CircRNA-G004213-miRNA-513b-5p-PRPF39 network analysis. (A) Circ-G004213 overexpression (circ-G004213-OE), negative control (Vector-NC), circ-G004213 knockout (si-circ-G004213) and negative control (si-NC) were detected the circ-G004213 expression in the HepG2 cells by RT-qPCR. (B) HepG2 cells transfection with miR-513b-5P mimics, mimics-NC, miR-513b-5P inhibitor and inhibitor-NC were detected of miR-513b-5p expression by RT-qPCR (C) lv-PRPF39, lv-vector, sh-PRPF39 and sh-NC of HepG2 cells were detected of PRPF39 expression by RT-qPCR. (D) RT-qPCR detection of miR-513b-5p expression in in the HepG2 transplanted tumor. (E) RT-qPCR and western-blot detection of PRPF39 in the HepG2 transplanted tumor. $P < 0.05$. Data are presented as means \pm SEM of at least three independent experiments. si, short interfering; RT-qPCR, reverse transcription-quantitative PCR; NS, no significant difference; miRNA, microRNA; sh, short hairpin.

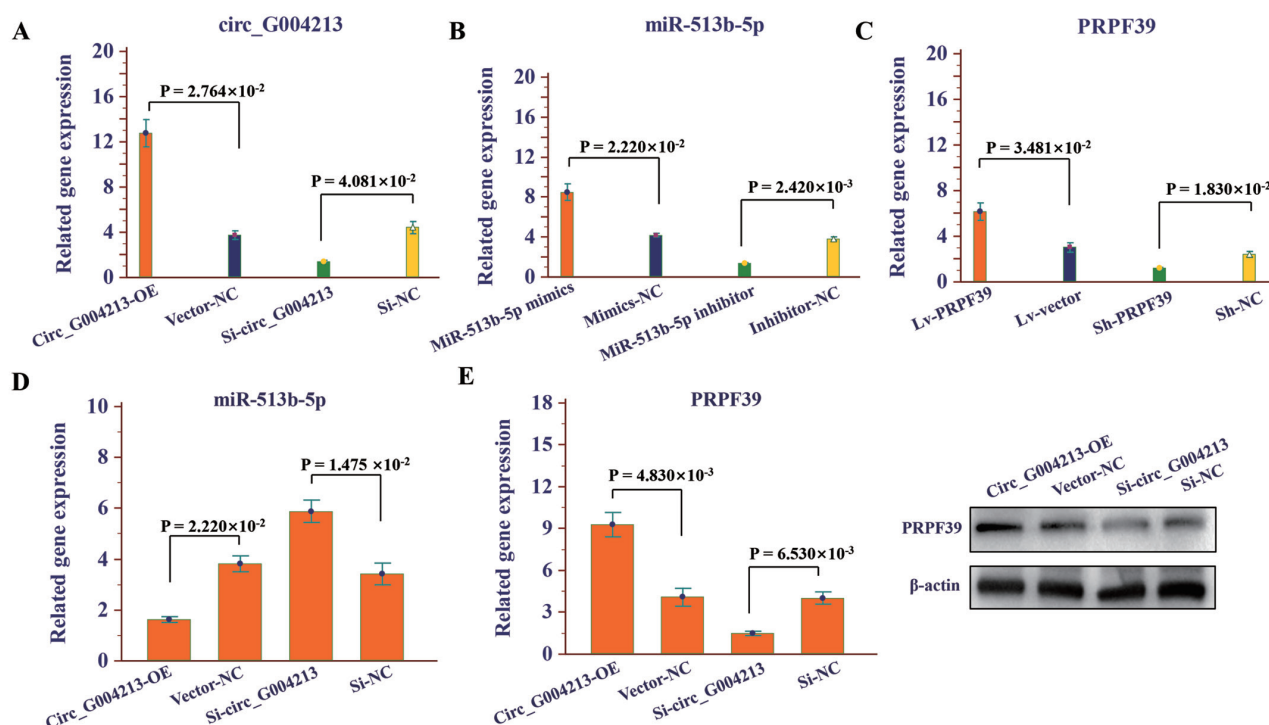


Table SI. Primer sequences.

	Forward primer	Reverse primer
<i>circ_G004213</i>	5'-GATTCTTAGACTCCAGAACAAGAGT-3'	5'-TCTGTGCTATGACAGTGCAGTATTG-3'
<i>circ_GABRG3</i>	5'-CAAGTGATCCTACCGCCTCGGCCT-3'	5'-TCAGTATGACAAGTGGAATGAAAGTC-3'
<i>GINS2</i>	5'-TCCCGAAGGCAGACGAAATC-3'	5'-ATAGCCTCAGCAGACGGGAG-3'
<i>ZIC2</i>	5'-AGCACATGAAGGTACCACCG-3'	5'-TGGACCTGCAAGACAAAAGCC-3'
<i>DRI</i>	5'-AAGGCCAGTTCTCGTTTGGA-3'	5'-GGGAATCCTCTGGGTATGTCT-3'
<i>PRPF39</i>	5'-GAAGTGCCATCTTCGGCTAGG-3'	5'-TGTTGCCTGTGCTGCCATTA-3'
<i>ZWINT</i>	5'CCTTCCTCCAGCTTCTGTATACCC-3'	5'-AAGGCCTGAGTTGGGTCTGA-3'
<i>CREB3L3</i>	5'-ATCCTGGCAACTCTTGCTCC-3'	5'-AGGTGATGCTGTTGCAGGTC-3'
<i>β-actin</i>	5'-AAGGTGACAGCAGTCGGTTGG-3'	5'-GGCAAGGGACTTCCTGTAACAATG-3'

Table SII. Clinicopathological features of patients.

Characteristics	Case 1	Case 2	Case 3	Case 4	Case 5
Gender	Male	Male	Male	Male	Male
Age (years)	66	26	48	62	65
HBV (copies/ml)					
Prior TACE	5.28x10 ⁴	1.14x10 ⁴	N/A	<1x10 ³	7.40x10 ³
TACE-1	<1x10 ³	1.12x10 ⁵	N/A	<1x10 ³	<1x10 ³
TACE-2	<1x10 ³	<1x10 ³	N/A	<1x10	<1x10 ³
AFP (ng/ml)					
Prior TACE	>3,000	>3,000	159.29	260.93	182.19
TACE-1	181.10	599.25	74.50	88.32	92.65
TACE-2	24.60	80.29	19.59	144.37	22.37
TNM stage					
Prior TACE	III A	II	III A	III B	III A
TACE-1	II	I	III A	III B	III A
TACE-2	II	I	III A	III B	II
BCLC stage					
Prior TACE	B	A3	B	B	B
TACE-1	B	A3	A4	B	B
TACE-2	A4	A3	A4	B	B
Child-Pugh score					
Prior TACE	6	5	6	5	5
TACE-1	5	5	6	6	7
TACE-2	6	5	6	6	6

HBV, hepatitis virus B; AFP, α -fetoprotein; prior TACE, prior to TACE treatment; TACE1, after the first TACE operation; TACE2, after the second TACE operation; BCLC, Barcelona Clinic Liver Cancer staging classification.