

Supplementary Table 1 Top 10 BC-related genes were screened out using DisGeNET database

Gene	Score	PMIDs
PIK3CA	0.280	301
BRCA1	0.280	2228
TP53	0.280	1099
PTEN	0.248	173
AKT1	0.242	152
CHEK2	0.236	130
FGFR2	0.231	112
MDM2	0.224	86
CDH1	0.222	71
TWIST1	0.213	47

Notes: PIK3CA, Phosphatidylinositol-4, 5-bisphosphate 3-kinase catalytic subunit alpha; BRCA1, breast cancer susceptibility gene 1; TP53, tumor protein p53; PTEN, phosphatase and tensin homolog; AKT1, AKT serine/threonine kinase 1; CHEK2, checkpoint kinase 2; FGFR2, fibroblast growth factor receptor 2; MDM2, murine double minute 2; CDH1, E-cadherin; TWIST1, twist family bHLH transcription factor 1; BC, breast cancer; [PMID: PubMed Unique Identifier](#).

Supplementary Table 3 Relationships between miR-216b expression, *HK2* mRNA expression and clinicopathological characters of BC patients

Clinicopathological data	Case	miR-216b expression	<i>p</i>	<i>HK2</i> mRNA expression	<i>p</i>	
Age (years)						
	< 50	62	0.37 ± 0.04	0.100	1.86 ± 0.21	0.100
	≥ 50	76	0.37 ± 0.04		1.86 ± 0.18	
Histological type						
	IDC	131	0.37 ± 0.04	0.516	1.86 ± 0.19	0.891
	Other type	7	0.38 ± 0.03		1.85 ± 0.12	
Clinical stage						
	Stage I/II	85	0.39 ± 0.03	0.0001	1.82 ± 0.19	0.003
	Stage III	53	0.33 ± 0.02		1.92 ± 0.18	
LNM						
	Yes	58	0.34 ± 0.03	0.0001	1.90 ± 0.19	0.034
	No	80	0.39 ± 0.03		1.75 ± 0.16	
Tumor diameter						
	≤ 2cm	79	0.40 ± 0.02	0.0001	1.83 ± 0.19	0.030
	> 2cm	59	0.33 ± 0.02		1.90 ± 0.18	

Notes: miR-216b, microRNA-216b; *HK2*, Hexokinase-2; BC, breast cancer; IDC, invasive ductal carcinoma; LNM, lymph node metastasis.

Supplementary Table 4 Sequences of mimics, inhibitors and siRNAs

Name	Sequence
miR-216b mimic	Sense: 5'-AAAUCUCUGCAGGCAAUGUGA-3' Antisense: 5'-ACAUUUGCCUCCAGAGAUUUUU-3'
mimic NC	Sense: 5'-UUCUCCGAACGUGUCACGUTT-3' Antisense: 5'-ACGUGACACGUUCGGAGAATT-3'
miR-216b inhibitor	AAAUCUCUGCAGGCAAUGUGA
Inhibitor NC	CAGUACUUUUGUGUAGUACAA
siHK2-1	CCGTAACATTCTCATCGATTT
siHK2-2	GCTACAAATCAAAGACAAGAA

Notes: MiR-216b, microRNA-216b; HK2, Hexokinase-2.

Supplementary Table 5 Primer sequences for RT-qPCR

Gene	Sequence
<i>MiR-216b</i>	F: 5'-GCCGCGCTAAAGTGCTTATAGTG-3' R: 5'-CACCAGGGTCCGAGGT-3'
<i>HK2</i>	F: 5'-AAGGCTTCAAGGCATCTG-3' R: 5'-CCACAGGTCATCATAGTTCC-3'
<i>mTOR</i>	F: 5'-GCTGTACGTTCCCTTCTCCTTC-3' R: 5'-CAAGAACTCGCTGATCCAAATG-3'
<i>Beclin1</i>	F: 5'-ACCGTGTCACCATCCAGGAA-3' R: 5'-GAAGCTGTTGGCACTTTCTGT-3'
<i>Bax</i>	F: 5'-CCCGAGAGGTCTTTTTCCGAG-3' R: 5'-CCAGCCCATGATGGTTCTGAT-3'
<i>Bcl-2</i>	F: 5'-TACAGGCTGGCTCAGGACTAT-3' R: 5'-CGCAACATTTTGTAGCACTCTG-3'
<i>4EBP1</i>	F: 5' CTAGCCCTACCAGCGATGAG-3' R: 5'-CCTGGTATGAGGCCTGAATG-3'
<i>LC3</i>	F: 5'-GCACCATGCCGTCGGAGAAGACC-3' R: 5'-CACTCCTAGGTGGGAACACTACTG-3'
<i>MMP-9</i>	F: 5'-ACGCACGACGTCTTCCAGTAC-3' R: 5'-ACCTGGTTCAACTCACTCCGG-3'
<i>GAPDH</i>	F: 5'-CATGAGAAGTATGACAACAGCCT-3' R: 5'-AGTCCTTCCACGATACCAAAGT-3'
<i>U6</i>	F: 5'-GTGCTCGCTTCGGCAGCACATATA-3' R: 5'-AAAAATATGGAACGCTTCACGAATTTG-3'

Notes: MiR-216b, microRNA-216b; HK2, Hexokinase-2; mTOR, mammalian target of rapamycin; Bcl-2, B-cell lymphoma/leukemia-2; Bax, Bcl-2 Associated X protein; 4EBP1, 4E-binding protein 1; LC3, light chain 3; MMP-9, matrix metalloproteinase-9; GAPDH, glyceraldehyde-3-phosphate dehydrogenase; RT-qPCR, reverse transcription quantitative polymerase chain reaction; F, forward; R, reverse.