

Additional file 1: Primers, oligonucleotides sequences and probes used in this study

Primers used in qRT-PCR analysis	
LINC00626	5' AAGGAAGCAGGAGGAGA 3' 5' TCGGGTCAACCACTCAT 3'
HAGLROS	5' TCTACACCCAGAGAGGGACG 3' 5' GCCTACTTCCTCCACACAA 3'
LINC00518	5' GTGAAAATCTGGTACTCGTCCC 3' 5' CTGACTTTTGCCACAGACTCCTG 3'
LINC01213	5' GGGGAGAAACCAAAATGCC 3' 5' AGAGATGATCACAGAAGGGTTCC 3'
GAPDH	5' TGCACCACCACTGCTTAGC 3' 5' GGCATGGACTGTGGTCATGAG 3'
Primers used in ChIP assays	
Primers for LINC00626 D1	5' TGATAGAATAAAGTCCAAAT 3' 5' TGTCACTTTTAAGTCTCCCA 3'
Primers for LINC00626 D2	5' ATTCTCATCATCTTTCAA 3' 5' TATTCATTTTGCTCTGTAT 3'
Primers for NC Site	5' ATGGTTGCCACTGGGGATCT 3' 5' TGCCAAAGCCTAGGGGAAGA 3'
Primers used in Luciferase assays	
Primers for LINC00626 D1	5' ATCCTCGAGTGATAGAATAAAGTCCAAAT 3' 5' GCAGCTAGCTGTCACTTTTAAGTCTCCCA 3'
Primers for LINC00626 D2	5' GCCTCGAGATTCTCATCATCTTTCAA 3' 5' ACGCTAGCTATTCATTTTGCTCTGTAT 3'
Primers for LINC00626 D1 Mut	5' GCTTCCTCTGCCAGCGACTGGTTTATCCCTTCTCC 3' 5' GGAGAAAGGGATAAACCAGTCGCTGGGCAGAGGAAGC 3'
Primers for LINC00626 D2 Mut	5' CTCATGACCTTGAATACCAGTCATTATCCAATCAACT 3' 5' AGTTGATTGGATAATGACTGGTATTCAAAGGTCATGAG 3'
Oligonucleotide sequence of shRNAs	
LINC00626-shRNA1	5' CCGGGAGAAGAGTCACCTAAGAGAGGATCCTCTCTTAGGGTGACTCTTCTTTTTG 3'
LINC00626-shRNA2	5' CCGGGAGCTGCTGAGTTAACCTAGAGGATCCTCTAGGTTAACTCAGCAGCTCTTTTTG 3'
UPF1-shRNA1	5' CCGGGGTGGAGGACGTAATCATCAAGGATCCTTGATGATTACGTCCTCCACCTTTTTG 3'
UPF1-shRNA2	5' CCGGGGTTTATGCCGTGAAGACTGTGGATCCACAGTCTTCACGGCATAAACCTTTTTG 3'
Sense and antisense probes to LINC00626	
Biotin-LINC00626-1-sense	5' GCCAGCATTCTAGGAAAAGCA 3'
Biotin-LINC00626-1-antisense	5' TGCTTTTCCTAGAATGCTGGC 3'
Biotin-LINC00626-2-sense	5' GGCATGAAGAATACTTTGCTG 3'
Biotin-LINC00626-2-antisense	5' CAGCAAAGTATTCTTCATGCC 3'
Biotin-LINC00626-3-sense	5' GGTTGACCCGACATGGACCAA 3'
Biotin-LINC00626-3-antisense	5' TTGGTCCATGTCGGGTCAACC 3'
Biotin-LINC00626-4-sense	5' AACCCCTCCCTGGTTTGAAG 3'
Biotin-LINC00626-4-antisense	5' CTTCAAACCAGGGAGGGGTT 3'
probes used for FISH	
LINC00626-1	5' CAAGATGGCTGCCGTAGCCTAAGC 3'
LINC00626-2	5' AGCAGCTCAGCAATGTCATCCAGG 3'
LINC00626-3	5' TGAAGAGAGCTGTGGGCTGCTTT 3'
LINC00626-4	5' AGAACGGTCACTTGGTCCATGTCG 3'
LINC00626-5	5' GTGACCAATGGCTGACTTGCTGGA 3'

Additional file 2: antibodies used in this study

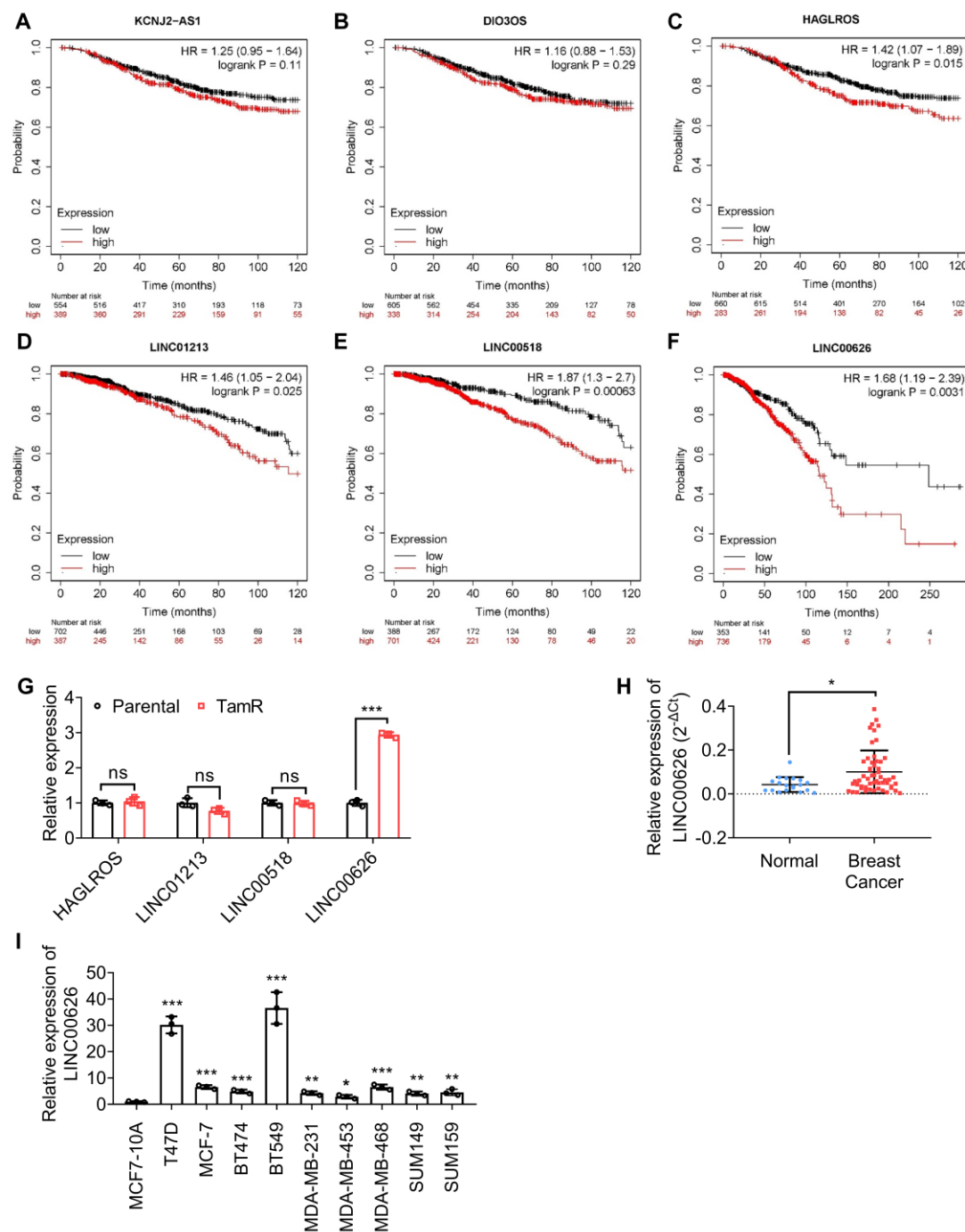
Antibody	Company	Catalog #	Species	Dilution	Purpose
ER α	Santa Cruz Biotechnology	sc-8005	Mouse	1 μ g	CHIP
UPF1	proteintech	66898-1-Ig	Mouse	1:100-1:1000	WB
UPF1	proteintech	66898-1-Ig	Mouse	1 μ g	RIP
ATF4	proteintech	60035-1-Ig	Mouse	1:100-1:1000	WB
ATF6	Santa Cruz Biotechnology	sc-166659	Mouse	1:100-1:1000	WB
CHOP	proteintech	15204-1-AP	Rabbit	1:500-1:3000	WB
PERK	Santa Cruz Biotechnology	sc-377400	Mouse	1:100-1:1000	WB
p-PERK	proteintech	82534-1-RR	Rabbit	1:100-1:1000	WB
XBp1-s	proteintech	24868-1-AP	Rabbit	1:100-1:1000	WB
β -ACTIN	Santa Cruz Biotechnology	sc-8432	Mouse	1:100-1:1000	WB

Additional file 3: Details about the Breast cancer specimens

Case.No	Category	Age	Anatomical site	Tumor size(cm)	Histological type	Lymph node	TNM stage	ER	PR	HER-2 (IHC)	HER-2 (FISH)	Ki67
1	breast cancer	47	Right	3*2cm	Infiltrating Ductal Carcinoma		II	ER(-)	PR(-)	HER-2(0)		Ki67(+)>20%
2	breast cancer	49	Right	1.2*1.2cm	ductal carcinoma in situ withmicroinvasion	0/26	/	ER (+)	PR (+)	HER-2(1+)		Ki67(+):10%
3	breast cancer	36	Left	0.5*0.5cm	ductal carcinoma in situ	0/16	/	ER (+)	PR (+)	HER-2(0)		Ki67(+)>30%
4	breast cancer	68	Left	2*2cm	Infiltrating Ductal Carcinoma	0/14	II	ER (+)	PR (+)	HER-2(0)		Ki67 (+):5%
5	breast cancer	56	Left	5*5cm	Infiltrating Ductal Carcinoma	3/25	III	ER(-)	PR(-)	HER-2(3+)		Ki67(+)>30%
6	breast cancer	52	Right	4*3cm	Infiltrating Ductal Carcinoma	2/13	III	ER(+)	PR(+)	HER-2(0)		Ki67(+):1:15%
7	breast cancer	60	Left	1.5*1.5cm	Infiltrating Ductal Carcinoma	0/20	I	ER(+)	PR(+)	HER-2(0)		Ki67 (+):1:15%
8	breast cancer	58	Right	4*4cm	Other, specify	0/15	/	ER(-)	PR(-)	HER-2(0)		Ki67(+):1:1:80%
9	breast cancer	67	Left	1*1cm	ductal carcinoma in situ withmicroinvasion	1/1 (Fusion lymph nodes)	/	ER(-)	PR(-)	HER-2(3+)		Ki67(+):1:1:80%
10	breast cancer	38	Left	3*2cm	Infiltrating Ductal Carcinoma	0/10	III	ER(+)	PR(+)	HER-2(0)		Ki67(+):1:1:50%
11	breast cancer	51	Right	6*5*1.5cm	ductal carcinoma in situ withmicroinvasion	2/16	/	ER(-)	PR(-)	HER-2(3+)		Ki67(+):1:1:10%
12	breast cancer	54	Left	3*2cm								
13	breast cancer	74	Left	3.5*3*2cm	Infiltrating Ductal Carcinoma	0/15	I - II	ER(+)	PR(-)	HER-2(1+)		Ki67(+):1:1:10%
14	breast cancer	87	Right	3*2*2cm	Infiltrating Ductal Carcinoma	0/16	II	ER(+)	PR(-)	HER-2(0)		Ki67(+):1:1:10%
15	breast cancer	38	Left	2*1.8*1.5cm	Infiltrating Ductal Carcinoma	2/29	III	ER(+)	PR(+)	HER-2(1+)		Ki67(+):1:1:15%
16	breast cancer	74	Left	2.5*2cm	Infiltrating Ductal Carcinoma	21/26	II	ER(-)	PR(-)	HER-2 (3+)		Ki67(+):1:1:20%
17	breast cancer	50	Right	3cm	Infiltrating Ductal Carcinoma	1/17	II	ER(+)	PR(+)	HER-2(0)		Ki67(+):1:1:5%
18	breast cancer	58	Left	3cm	Infiltrating Ductal Carcinoma	1/18	II	ER(+)	PR (+)	HER-2(1+)		Ki67(+):1:1:5%
19	breast cancer	60	Right	4.5*3cm	Infiltrating Ductal Carcinoma	2/19	II	ER(-)	PR(-)	HER-2 (3+)		Ki67(+):50%
20	breast cancer	44	Right	2*2.5cm	Infiltrating Ductal Carcinoma	1/25	II	ER(+)	PR(+)	HER-2 (2+)	/	Ki67(+):1:1:5%
21	breast cancer	78	Left	2.5*2.5cm	Infiltrating Ductal Carcinoma	0/16	II	ER(+)	PR(-)	HER-2 (2+)	/	Ki67(+):1:1:15%
22	breast cancer	54	Right	3*3cm	Infiltrating Ductal Carcinoma	0/22	III	ER(+)	PR(+)	HER-2 (3+)		Ki67(+):1:1:20%
23	breast cancer	44	Left	5*4*3cm	Infiltrating Ductal Carcinoma	0/22	II	ER(+)	PR(+)	HER-2 (2+)	negative	Ki67(+)>50%
24	breast cancer	84	Left	4*3*2cm	Infiltrating Ductal Carcinoma	0/15	II	ER(+)	PR(+)	HER-2 (2+)	/	Ki67(+):1:1:15%
25	breast cancer	64	Left	6*5*3cm	ductal carcinoma in situ	0/17	/	ER (-)	PR(-)	HER-2(3+)		Ki67(+):1:1:60%
26	breast cancer	55	Right	1.5*1cm	Infiltrating Ductal Carcinoma	0/13	III	ER(+)	PR(-)	Her-2(3+)		Ki67(+):1:1:15%
27	breast cancer	45	Right	3cm	Infiltrating Ductal Carcinoma	0/23	II -III	ER(+)	PR(+)	Her-2(3+)		Ki67(+):1:1:30%
28	breast cancer	63	Left	2*1.5*1cm	Infiltrating Ductal Carcinoma	0/18	III	ER(+)	PR(+)	Her-2(1+)		Ki67(+):1:1:15%
29	breast cancer	55	Left	2cm	Infiltrating Ductal Carcinoma	0/30	II	ER(+)	PR(-)	Her-2(2+)	negative	Ki67(+)>80%
30	breast cancer	28	Right	3*2cm	Infiltrating Ductal Carcinoma	4/28	II -III	ER(+)	PR(+)	Her-2(3+)		Ki67(+):1:1:80%
31	breast cancer	42	Right	3*2.8cm	Infiltrating Ductal Carcinoma	5/20	III	ER(-)	PR(-)	HER-2(3+)		Ki67(+):1:1:40%
32	breast cancer	45	Right	1.5cm	Infiltrating Ductal Carcinoma	4/15	II	ER(+)	PR(+)	HER-2(1+)		Ki67LI:20%
33	breast cancer	52	Left	3.5*3cm	Infiltrating Ductal Carcinoma	7/18	III	ER(-)	PR(-)	HER-2(2+)	negative	Ki67LI:60%
34	breast cancer	49	Right	3.5*2*2.5cm	Infiltrating Ductal Carcinoma	0/24	II	ER(-)	PR(-)	HER-2(3+)		Ki67(+):1:1:30%
35	breast cancer	52	Left	2.5*2cm	Infiltrating Ductal Carcinoma	0/31	III	ER(-)	PR(-)	HER-2(0)		Ki67LI:90%
36	breast cancer	77	Right	5*4*2.5cm	Infiltrating Ductal Carcinoma	0/15	II	ER(+)	PR(+)	Her-2(1+)		Ki67LI:50%
37	breast cancer	50	Right	1.5*1.5cm	Infiltrating Ductal Carcinoma	0/10	II -III	ER(+)	PR(+)	HER-2(0)		Ki67(+):1:1:5%

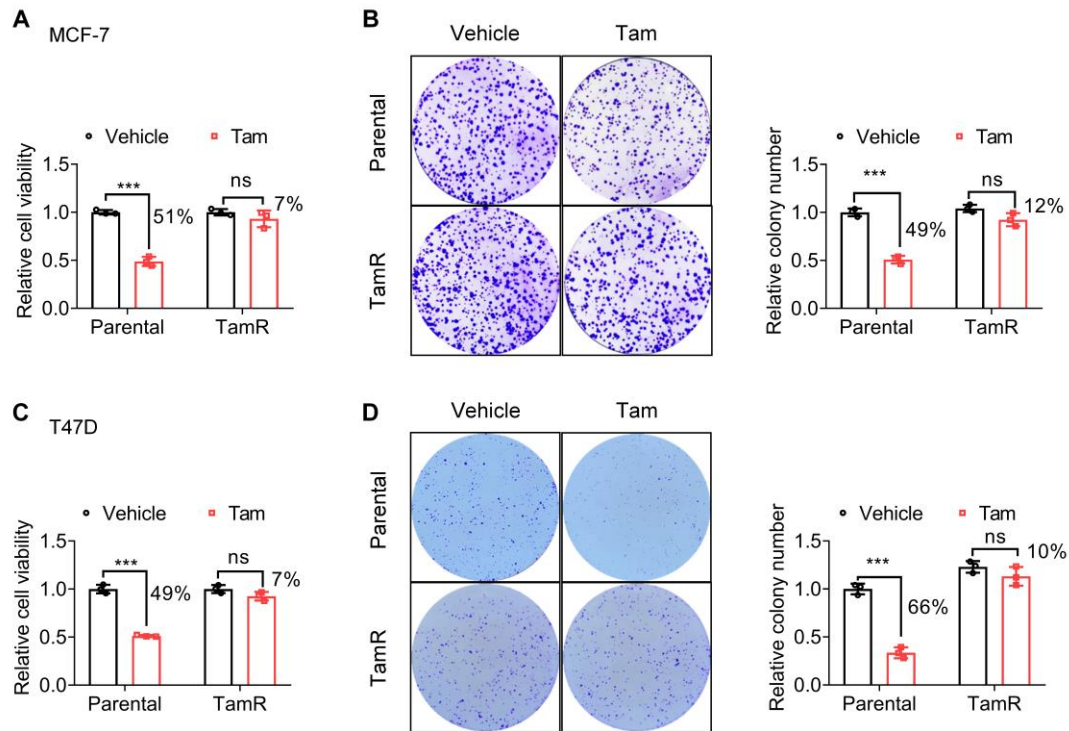
Additional file 5

Supplementary Figure 1: Elevated expression of LINC00626 in breast cancer is associated with a poor prognosis.



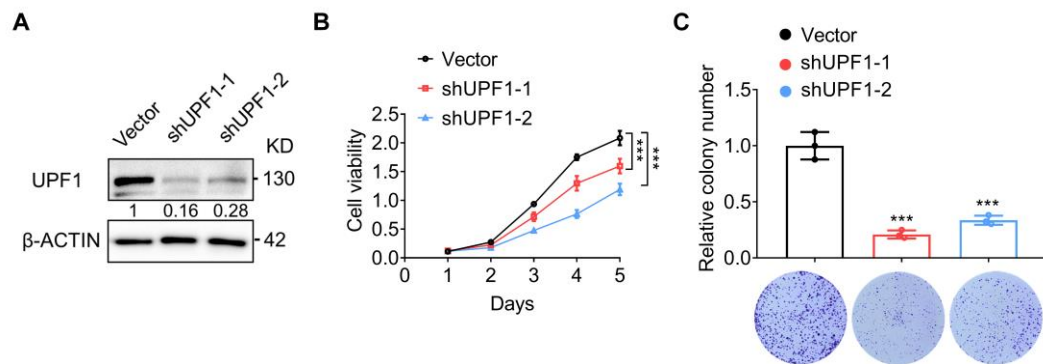
Supplementary Fig. S1. Elevated expression of LINC00626 in breast cancer is associated with a poor prognosis. **A-E**, Kaplan-Meier analysis of KCNJ2-AS1 (**A**), DIO3OS (**B**), HAGLROS (**C**), LINC01213 (**D**), and LINC00518 (**E**) was conducted using the KM-plotter online tool. **F**, Kaplan–Meier plots were utilized to analyze the overall survival rates in breast cancer patients with different levels of LINC00626 expression. **G**, The expression of candidate lncRNAs was examined in both parental and TamR cells. **H**, The LINC00626 levels in breast cancer samples (n=55) and normal-adjacent samples (n=19) were conducted using qRT-PCR. **I**, The expression levels of LINC00626 were analyzed by qRT-PCR in one non-tumorigenic and nine distinct breast cancer cell lines. Results are shown as mean $\pm$ SD obtained from three independent experiments. ns, not significant; * P <0.05; ** P <0.01; *** P <0.001 (Log-rank test in **A-F**, Student's t test in **G and H**, ANOVA test in **I**).

Supplementary Figure 2: The validation of MCF-7 TamR and T47D TamR for their responses to tamoxifen treatment.



Supplementary Fig. S2. The validation of MCF-7 TamR and T47D TamR for their responses to tamoxifen treatment. **A** and **B**, Cell viability was determined by MTT (**A**) and colony formation (**B**) assays in MCF-7 parental and TamR cells treated with 1 $\mu\text{mol/L}$ Tam or vehicle. **C** and **D**, Cell viability was determined by MTT (**C**) and colony formation (**D**) assays in T47D parental and TamR cells treated with 1 $\mu\text{mol/L}$ Tam or vehicle. TamR: Tamoxifen-resistant cells; Tam: Tamoxifen. Results are shown as mean $\pm$ SD obtained from three independent experiments. ns, not significant; *** $P < 0.001$ (Student's t test in **A-D**).

Supplementary Figure 3: UPF1 enhances breast cancer cell proliferation.



Supplementary Fig. S3. UPF1 enhances breast cancer cell proliferation in MCF-7

cells. **A**, The protein levels of UPF1 were determined by western blotting in UPF1-depleted MCF-7 cells, β -ACTIN was used as input control. **B** and **C**, Cell viability of MCF-7 cells transfected with plasmids containing two independent UPF1 shRNAs or vector was determined by MTT (**B**) and colony formation (**C**) assays. Results are shown as mean $\pm$ SD obtained from three independent experiments. *** P <0.001 (ANOVA test).