

Table S1: Key Resources

Antibodies	Source	Identifier	Dilution
IRF3	Proteintech	11312-1-AP-100UL	1:1000
HER2	Proteintech	18299-1-AP-50ul	1:1000
Phospho-IRF3 (Ser396)	Abcam	Ab138449	1:1000
cGAS	Proteintech	26416-1-AP-100ul	1:1000
TBK1	Cell signaling technology	38066S	1:1000
AKT1 (B-1)	Santa Cruz	sc-5298	1:500
Phospho-TBK1 (Ser172)	Cell signaling technology	5483S	1:1000
Phospho-AKT (Ser473)	Cell signaling technology	4060S	1:1000
GAPDH	Proteintech	60004-1-IG-100UL	1:5000
α -tubulin	Beyotime	AT819	1:5000
Anti-human HLA-A, B, C	BioLegend	311406	1:300
CD3	BioLegend	300313	1:500
CD28	BioLegend	302913	1:500
CD8a	Proteintech	66868-1-IG	1:300
GZMB	Proteintech	13588-1-AP	1:300
Chemicals, peptides, and recombinant proteins			
Lipofectamine 2000	Invitrogen	11668019	
HT-DNA	Sigma-Aldrich	D6898	
2'3'-cGAMP	Titan	04800926	
Poly(I:C)/dsRNA	InvivoGen	tlrl-picwlv	
Poly(dA:dT) / LyoVec	InvivoGen	tlrl-patc	
Human IL-2	PeptoTech	200-02-100	
RIPA buffer	Cell signaling technology	9806s	
DAPI	Sigma-Aldrich	D9542	
ADU-S100	MCE	HY-12885B	
Critical commercial assays			
2'3'-cGAMP ELISA Kit	Cayman	501700	
RNA Purification Kit	EZBioscience		
HiScript II QRT SuperMix	Vazyme	R223-01	
ChamQ-SYBR-qPCR-MasterMix	Vazyme	Q311-02	
qPCR Primers (human)	Forward (5'>3')	Reverse (5'>3')	
IFNB1	GTCAGAGTGGAAATCCTAAG	TATGCAGTACATTAGCCATC	
GADPH	GATTCCACCCATGGCAAATTC	CTTCTCCATGGTGGTGAAGAC	
CCL5	AGCAGTCGTCTTTGTCAC	TAGCTCATCTCCAAAGAGTT	
CXCL10	TACCTGCATCAGCATTAGTA	TGTAGCAATGATCTCAACAC	

ISG15	GAACTCATCTTTGCCAGTA	ATCTTCTGGGTGATCTGC
IFIT-1	TACAGCAACCATGAGTACAA	TCACATAGGCTAGTAGGTTG
HLA-B	CAGTTCGTGAGGTTTCGACAG	CAGCCGTACATGCTCTGGA
B2M	GAGGCTATCCAGCGTACTCCA	CGGCAGGCATACTCATCTTTT
TAPBP	TGGACCGGAAATGGGACCT	CCCCAGAAGGGTAGAAGTGG
TAP1	TGCCCCGCATATTCTCCCT	CACCTGCGTTTTTCGCTCTTG
TAP2	TGGACGCGGCTTTACTGTG	GCAGCCCTCTTAGCTTTAGCA
ERAP1	CCCCTCAAATGGTCCCTTGC	GAGATGCTTCAGTGCTCTGAC

Table S2. Clinical characteristics of HER2+ breast cancer patients

Variables	Total patients n = 126 (%)	Nuclear-IRF3_high n = 63 (%)	Nuclear-IRF3_low n = 63 (%)	p-value
Age				0.35
≤60	104 (82.5)	50 (79.4)	54 (85.7)	
>60	22 (17.5)	13 (20.6)	9 (14.3)	
Pathologic types				0.72
IDC	118 (93.7)	60 (95.2)	58 (92.1)	
DCIS	8 (6.3)	3 (4.8)	5 (7.9)	
Multifocality				0.21
Yes	115 (91.3)	55 (87.3)	60 (95.2)	
No	11 (8.7)	8 (12.7)	3 (4.8)	
Tumor location				0.32
Upper-inner	22 (17.5)	10 (15.9)	12 (19.1)	
Lower-inner	6 (4.8)	2 (3.2)	4 (6.3)	
Upper-outer	70 (55.5)	35 (55.5)	35 (55.5)	
Lower-outer	18 (14.3)	8 (12.7)	10 (15.9)	
Central	10 (7.9)	8 (12.7)	2 (3.2)	
T stage				0.48
T1	30 (23.8)	14 (22.2)	16 (25.4)	
T2	85 (67.5)	42 (66.7)	43 (68.2)	
T3	8 (6.3)	6 (9.5)	2 (3.2)	
T4	3 (2.4)	1 (1.6)	2 (3.2)	
N stage				0.57
N0	59 (46.8)	30 (47.6)	29 (46.1)	
N1	26 (20.6)	13 (20.6)	13 (20.6)	
N2	21 (16.7)	8 (12.7)	13 (20.6)	
N3	20 (15.9)	12 (19.1)	8 (12.7)	
M stage				0.62
M0	122 (96.8)	60 (95.2)	62 (98.4)	
M1	4 (3.2)	3 (4.8)	1 (1.6)	
Histological grade				1.00
I	0 (0)	0 (0)	0 (0)	
II	64 (50.8)	32 (50.8)	32 (50.8)	
III	62 (49.2)	31 (49.2)	31 (49.2)	
ER				0.28
Positive	68 (54.0)	31 (49.2)	37 (58.7)	
Negative	58 (46.0)	32 (50.8)	26 (41.3)	
PR				1.00
Positive	54 (42.9)	27 (42.9)	27 (42.9)	
Negative	72 (57.1)	36 (57.1)	36 (57.1)	
Ki-67 (%)				0.85
≤ 30	81 (64.3)	41 (65.1)	40 (63.5)	
> 30	45 (35.7)	22 (34.9)	23 (36.5)	
Endocrine therapy				0.86
Yes	61 (48.4)	30 (47.6)	31 (49.2)	
No	65 (51.6)	33 (52.4)	32 (50.8)	
Chemotherapy				0.82
Yes	101 (80.2)	51 (81.0)	50 (79.4)	
No	25 (19.8)	12 (19.0)	13 (20.6)	

IDC: invasive ductal carcinoma; DCIS: ductal carcinoma in situ; ER: estrogen receptor; PR: progesterone receptor.

Figure S1

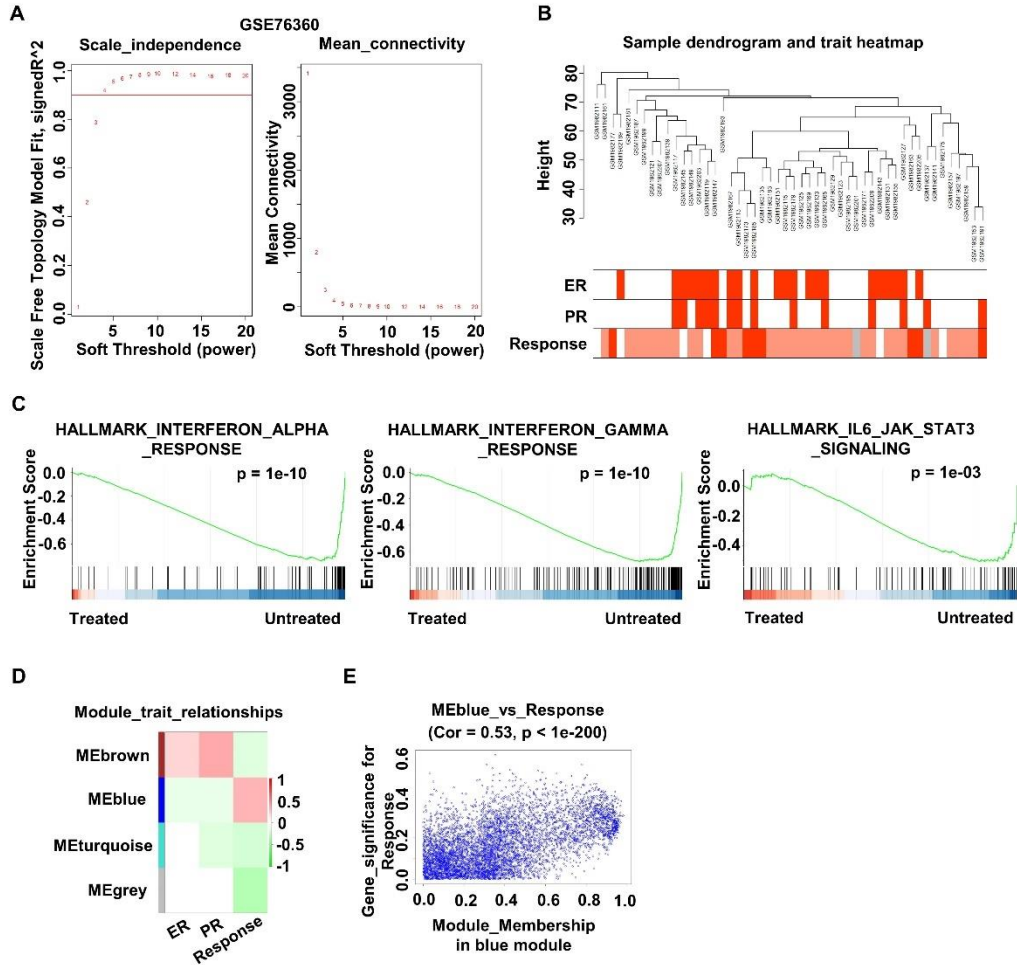


Figure S2

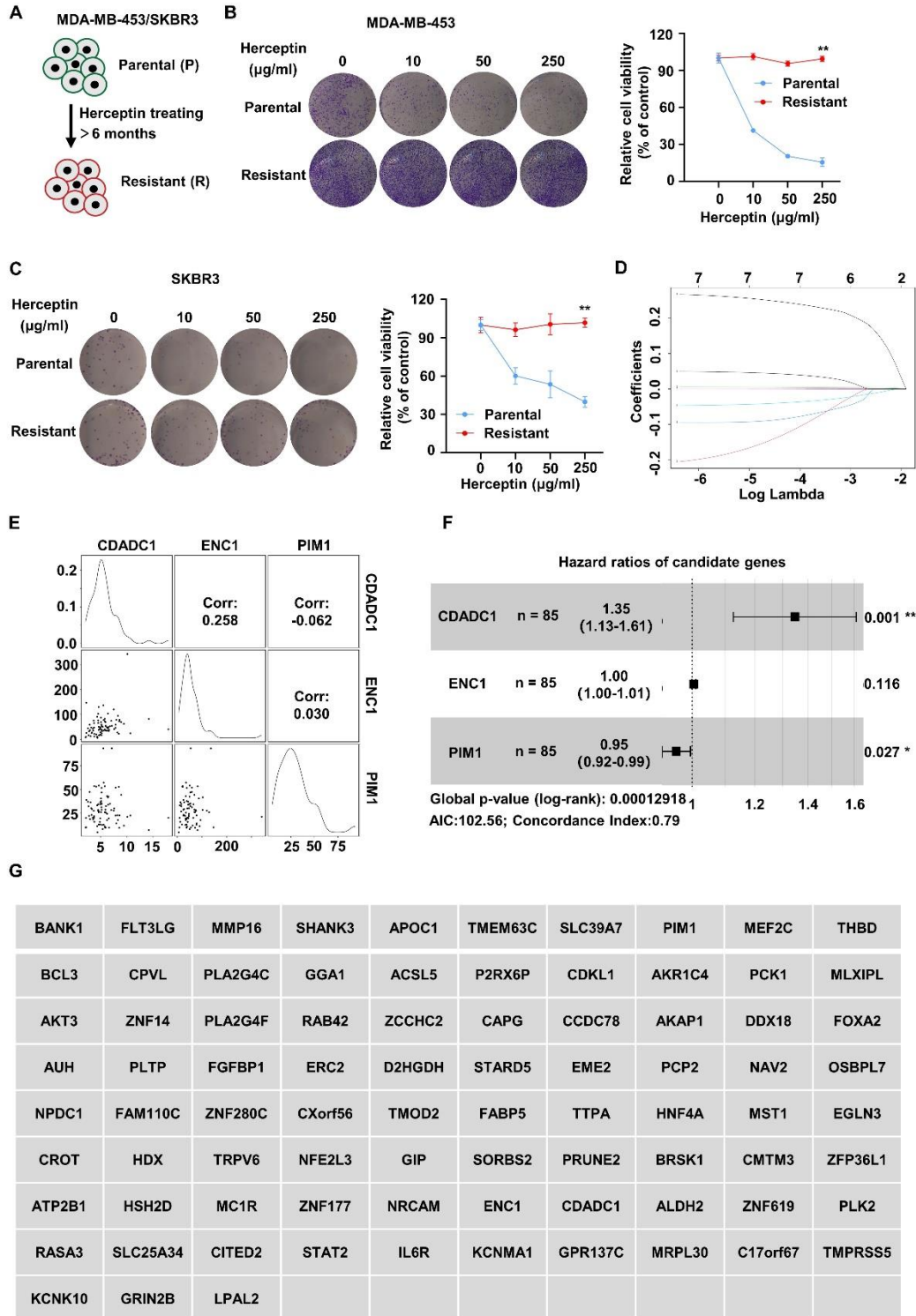


Figure S3

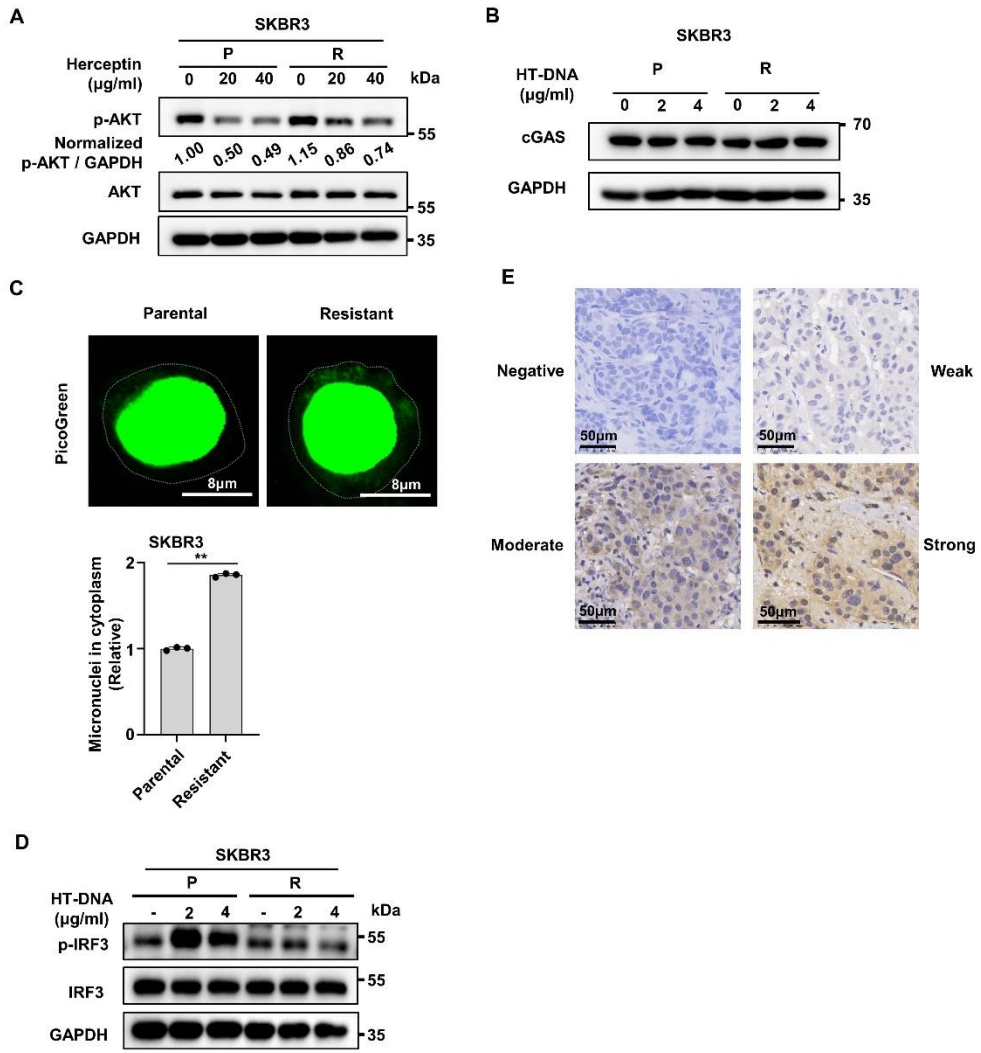


Figure S4

