Supplementary figures

S1. Baseline expression of hormone receptors and growth factor receptors in different cell lines. *1A*. Baseline ERα and PR expression levels in different cell lines. MCF-7, T47D, ZR-75-1, BT474, MDA-MB-231, Sk-Br-3, and MCF-7/F cells were cultured in estrogenized medium (10% FBS). MCF-7:5C, MCF-7:2A, and T47D:C42 cells were cultured in phenol red free medium containing charcoal-stripped serum (10% SFS). Cell lysates were harvested. ERα and PR expression levels were examined by immunoblotting with primary antibodies. Immunoblotting for β-actin was determined for loading control. ***1B.*** **Baseline HER2 and EGFR expression levels in different cell lines.** Cell lysates were harvested as above. HER2 and EGFR expression levels were examined by immunoblotting with primary antibodies. Immunoblotting for β-actin was determined for loading control. ***1C.*** **Baseline c-Src phosphorylation in different cell lines.** Cell lysates were harvested as above. Phosphorylated c-Src and total c-Src were detected by immunoblotting with primary antibodies. Immunoblotting for β-actin was used for loading control.

S2. Verification of cell line identity by DNA fingerprinting. The identity of the cell lines was verified by DNA fingerprinting using the commercially available kit, PowerPlex® 1.2 System (Promega). The following STR markers were tested: CSF1PO, TPOX, TH01, Amelogenin, vWA, D16S539, D7S820, D13S317 and D5S818. Allelic score data from the 9 polymorphic STR loci reveal a pattern almost identical among the cell lines that is very closely related to the scores reported for cells by the ATCC, and consistent with their presumptive identity. Areas of identity were highlighted in pink. Allelic loss was highlighted in green. Variant allele was highlighted in blue.

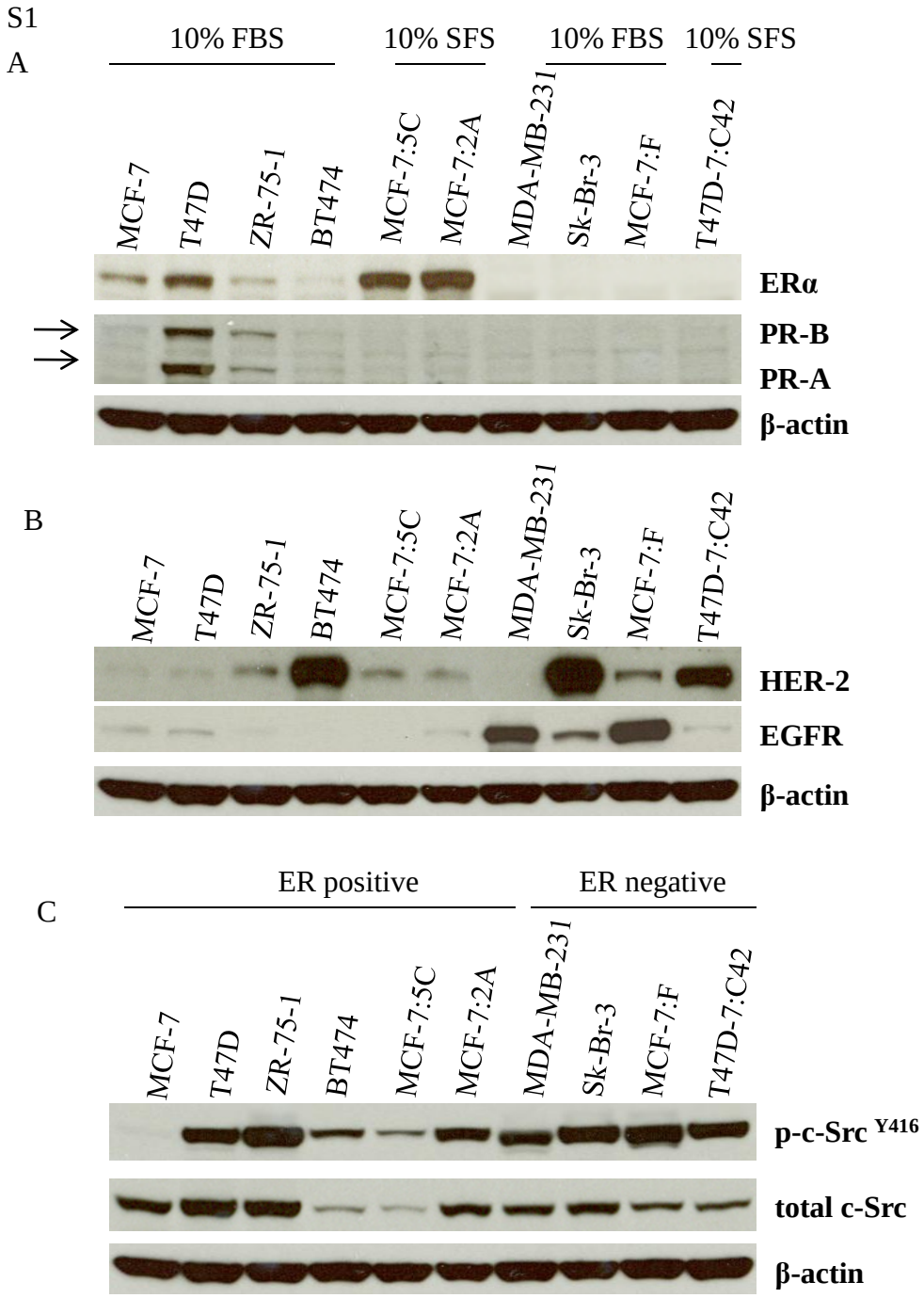
S3. Modulation of ERα expression in the absence of estrogen. Wild-type ER positive MCF-7, T47D, ZR-75-1, and BT474 cells were cultured under conditions with basal estrogen (10% FBS) or without basal estrogen (10% SFS) for 3 days, respectively. Cell lysates were harvested. ERα expression levels were examined by immunoblotting with primary antibody. Immunoblotting for β-actin was determined for loading control.

S4. Changes of cell cycles after lapatinib and PP2 treatment. *4A*. Images of S phase changes after lapatinib and PP2 treatment in Sk-Br-3 and MDA-MB-231 cells. Sk-Br-3 and MDA-MB-231 cells were treated with vehicle (0.1% DMSO), lapatinib (1 μM), and PP2 (5 μM) for 24h. Cells were harvested and fixed with 75% EtOH. Cell cycles were analyzed through flow cytometery. ***4B.*** **S phase changes after lapatinib and PP2 treatment in BT474 and T47D:C42 cells.** Cells were treated and analyzed as above. ***4C.*** **Images of S phase changes after lapatinib and PP2 treatment in BT474 and T47D:C42 cells.** Cells were treated and analyzed as above.

S5. Blocking HER2 phosphorylation and subsequent growth pathways after lapatinib treatment. Sk-Br-3, BT474, T47D:C42, and MDA-MB-231 cells were treated with vehicle (0.1% DMSO) and lapatinib (1 μM) for 24h. HER2, MAPK, and Akt phosphorylation were examined by immunoblotting with primary antibodies. Immunoblotting for total HER2, MAPK, and Akt were determined for loading controls.

S6. The PP2 sensitized Sk-Br-3 cells to ICI 182,780. Sk-Br-3 cells were seeded in 24-well plates in triplicate. After one day, the cells were treated with vehicle (0.1% DMSO), ICI 182,780 (1 μM), PP2 (5 μM), and ICI 182,780 (1 μM) plus PP2 (5 μM) in estrogenized medium (10% FBS). The cells were harvested after 7 days treatment and total DNA was determined as above. $P<0.05$, * compared with control.

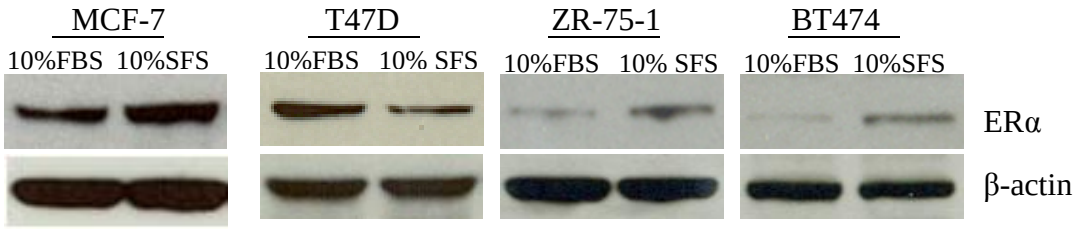
Supplementary Figures 1-6



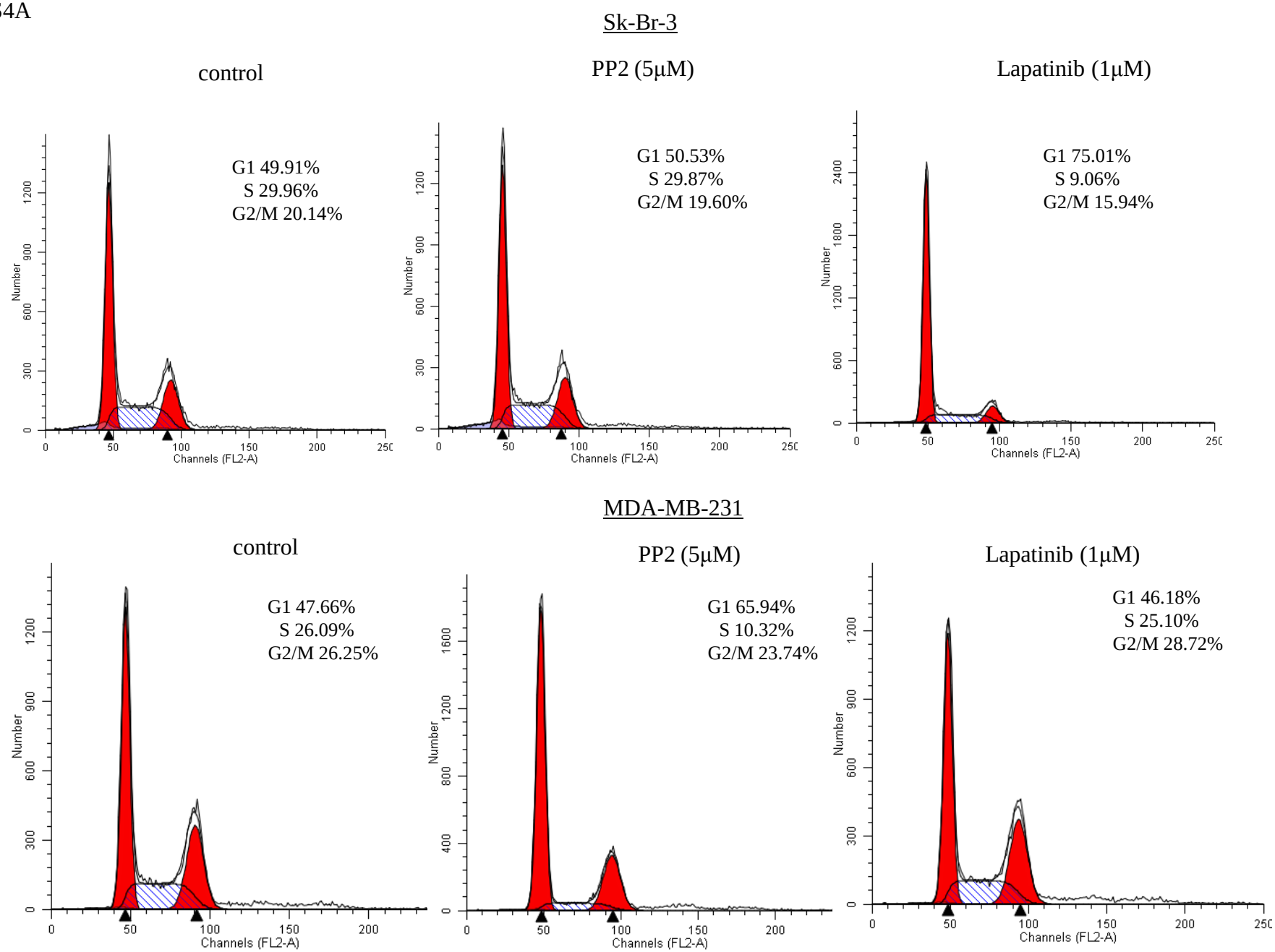
S2

cell line:	D5S818 allele 1	D5S818 allele 2	D13S317 allele 1	D13S317 allele 2	D7S820 allele 1	D7S820 allele 2	D16S539 allele 1	D16S539 allele 2	vWA allele 1	vWA allele 2	TH01 allele 1	TH01 allele 2	Amelogenin allele 1	Amelogenin allele 2	TPOX allele 1	TPOX allele 2	CSF1PO allele 1	CSF1PO allele 2
MCF-7 ATCC	11	12	11	11	8	9	11	12	14	15	6	6	X	X	9	12	10	10
MCF7-WS8 p24		12	11	11	8	9	11	12		15	6	6	X	X	9	12	10	10
MCF7/5C p217		12	11	11	8	9	11	12	14	15	6	6	X	X	9	12	10	11
MCF7/2A p549		12	11	11	8	9	11	12	14	15	6	6	X	X	9	12	10	10
T47D ATCC	12	12	12	12	11	11	10	10	14	14	6	6	X	X	11	11	11	13
T47D:A18 p.164	12	12	12	12	11	11	10	10	14	14	6	10	X	X	11	11	11	11
T47D:A18/4-OHT p.115	12	12	12	12	11	11	10	10	14	14	6	6	X	X			11	13
T47D:C42 p.83	12	12	12	12	11	11	10	10	14	14	6	6	X	X			11	13
MDA-MB-231 ATCC	12	12	13	13	8	9	12	12	15	18	7	9.3	X	X	8	9	12	13
MDA-MB-231(10A) p.23	12	12	13	13	8	8	12	12	15	14	7	9.3	X	X	8	9	12	13
BT-474 ATCC	11	13	11	11	9	12	9	11	15	16	7	7	X	X	8	8	10	11
BT-474 p.50	11	13	11	11	9	12	9	11	15	16	7	7	X	X	8	8	10	11
Sk-Br-3 ATCC	9	12	11	12	9	12	9	9	17	17	8	9	X	X	8	11	12	12
Sk-Br-3 p.50	9	12	11	12	9	12	9	9	17	17	8	9	X	X	8	11	11	12
ZR-75-1 ATCC	13	13	9	9	10	11	11	11	16	18	7	9.3	X	X	8	8	10	11
ZR-75-1 p.5	13	13	9	9	10	11	11	11	16	18	7	9.3	X	X	8	8	10	11

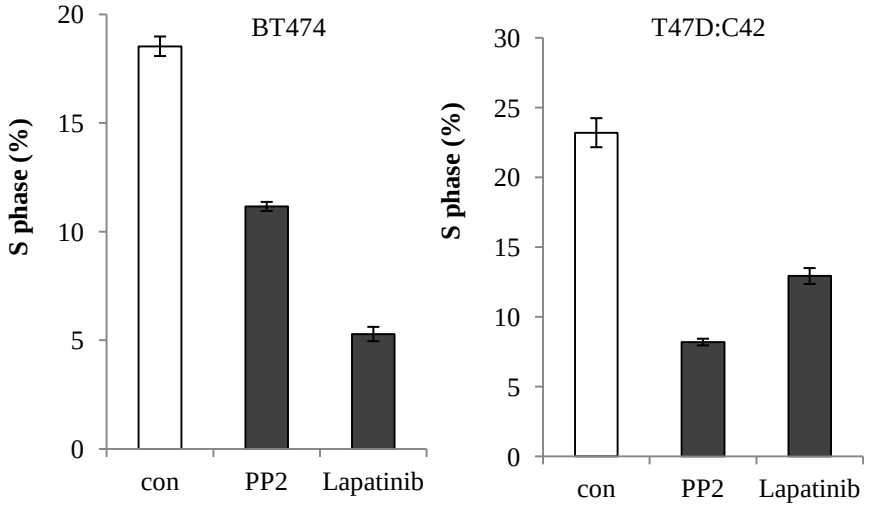
S3


MCF-7
T47D
ZR-75-1
BT474
10%FBS 10%SFS
10%FBS 10% SFS
10%FBS 10% SFS
10%FBS 10%SFS
ERα
β-actin

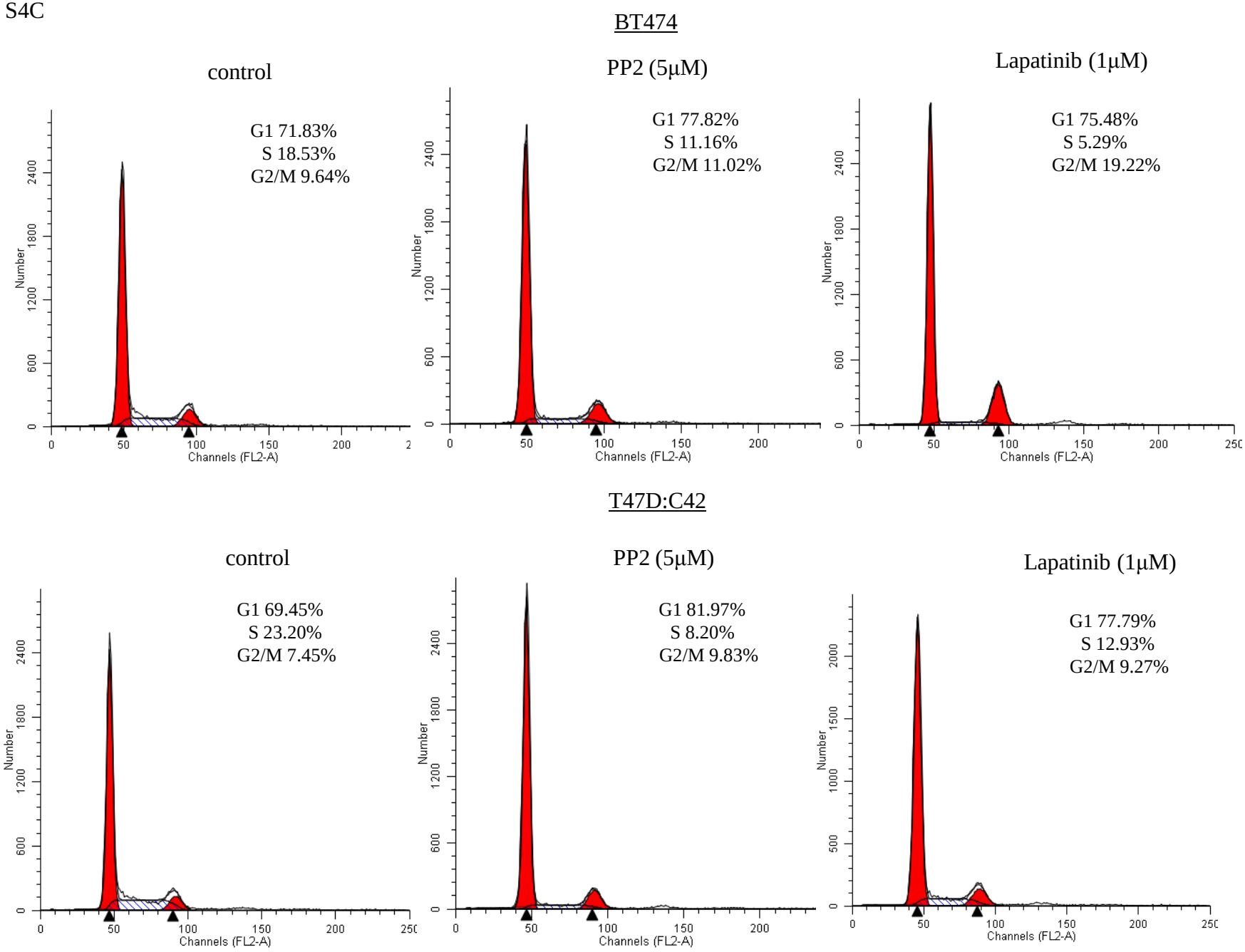
S4A


Sk-Br-3
control
G1 49.91%
S 29.96%
G2/M 20.14%
PP2 (5μM)
G1 50.53%
S 29.87%
G2/M 19.60%
Lapatinib (1μM)
G1 75.01%
S 9.06%
G2/M 15.94%
MDA-MB-231
control
G1 47.66%
S 26.09%
G2/M 26.25%
PP2 (5μM)
G1 65.94%
S 10.32%
G2/M 23.74%
Lapatinib (1μM)
G1 46.18%
S 25.10%
G2/M 28.72%
Number
Channels (FL2-A)

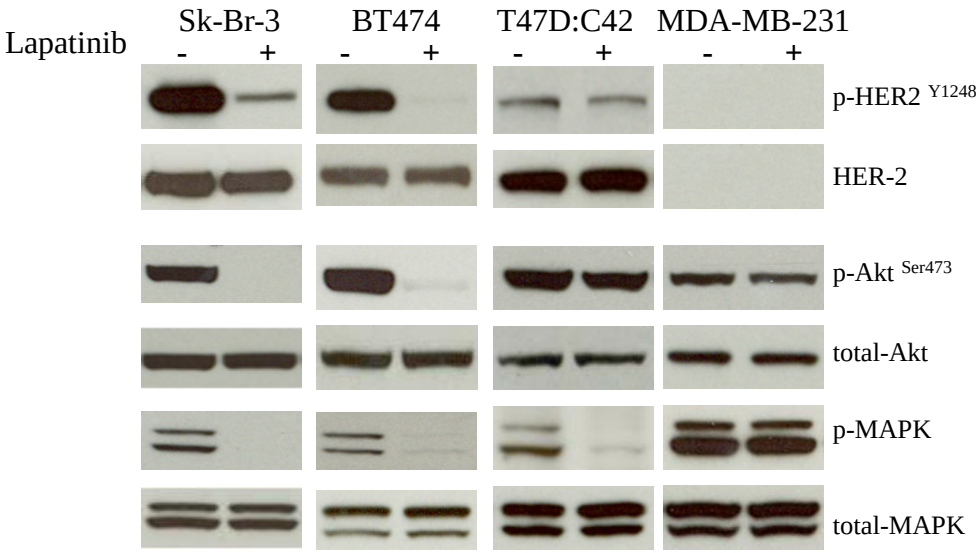
S4B


BT474
S phase (%)
20
15
10
5
0
con
PP2
Lapatinib
T47D:C42
S phase (%)
30
25
20
15
10
5
0
con
PP2
Lapatinib

S4C


BT474
control
G1 71.83%
S 18.53%
G2/M 9.64%
PP2 (5μM)
G1 77.82%
S 11.16%
G2/M 11.02%
Lapatinib (1μM)
G1 75.48%
S 5.29%
G2/M 19.22%
T47D:C42
control
G1 69.45%
S 23.20%
G2/M 7.45%
PP2 (5μM)
G1 81.97%
S 8.20%
G2/M 9.83%
Lapatinib (1μM)
G1 77.79%
S 12.93%
G2/M 9.27%
Number
Channels (FL2-A)

S5


Lapatinib
Sk-Br-3
BT474
T47D:C42
MDA-MB-231
- + - + - + - +
p-HER2 Y1248
HER-2
p-Akt Ser473
total-Akt
p-MAPK
total-MAPK

S6