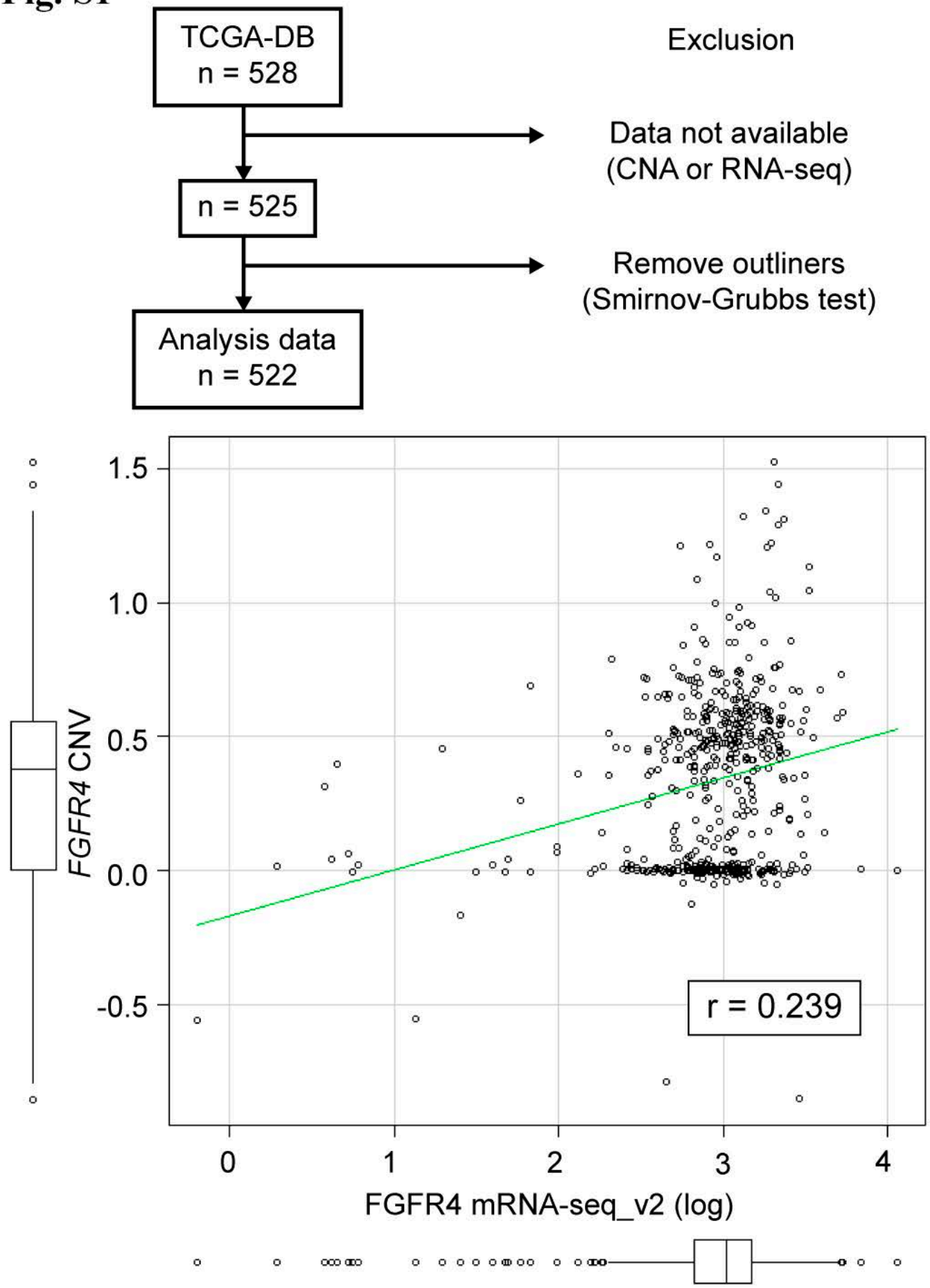
Supplementary Table 1.
Patient characteristics for the analyzed ccRCC specimens

	Number	%
Total	74	
Median observation time, months (range)	61.15 (0.2–104.2)	
Median age (range)	63.8 (44.2–81.7)	
Sex		
Male	60	81
Female	14	19
Clinical T stage (UICC)		
1a	27	36
1b	16	22
2a	8	11
2b	2	3
3a	15	20
3b	3	4
4	3	4
Clinical N stage (UICC)		
0	66	89
1	5	7
2	3	4
Clinical M stage (UICC)		
0	58	78
1	16	22
Grade (Fuhrman)		
1	15	20
2	25	34
3	26	35
4	8	11
Infiltrative growth (INF)		
α	49	66
β	23	31
γ	1	1
N/A	1	1
Treatment outcome		
Cancer-free survival	48	65
Survival with RCC	8	11
Cancer-specific death	14	19
Death due to other causes	4	5

Fig. S1



Analysis of the relationship between FGFR4 gene copy number and FGFR4 mRNA expression in TCGA database.

Correlation analysis was performed on FGFR4 CNV and FGFR4 mRNA-seq V2 data from 522 cases from TCGA database, excluding outliers for CNV (Smirnov–Grubbs test). Normality was determined using the logarithmic value of RNAseqV2 data.

Pearson's fractional test revealed a weak correlation ($r = 0.239$, $P < 0.01$).

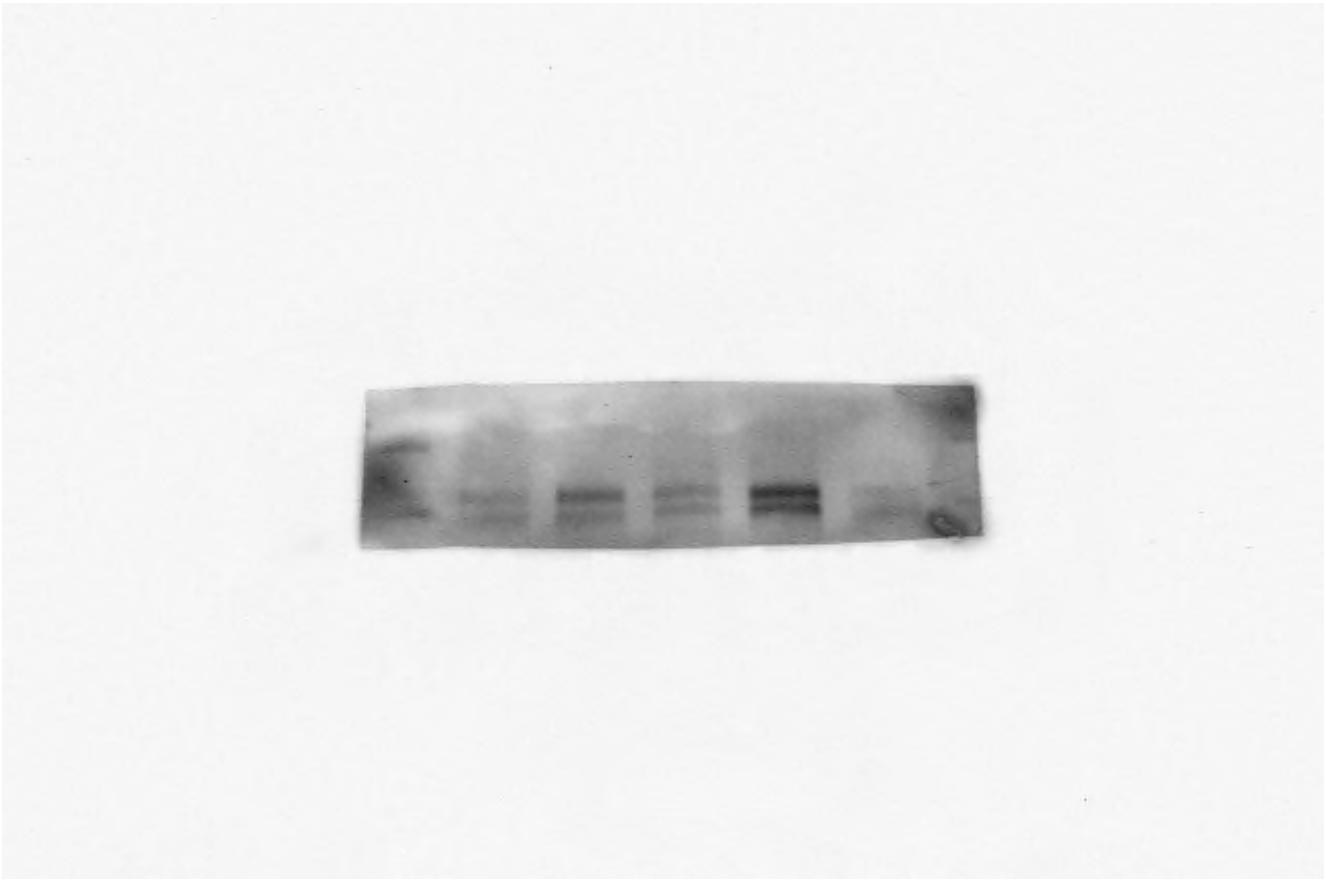


Figure S2 Western blot for FGFR4 protein expression in RCC cell lines.
From left, molecular weight marker, ACHN, A498, A704, 769-P, 786-O.
Gel were cut at 70 kDa and other side membrane was used in Western blots for other examination.

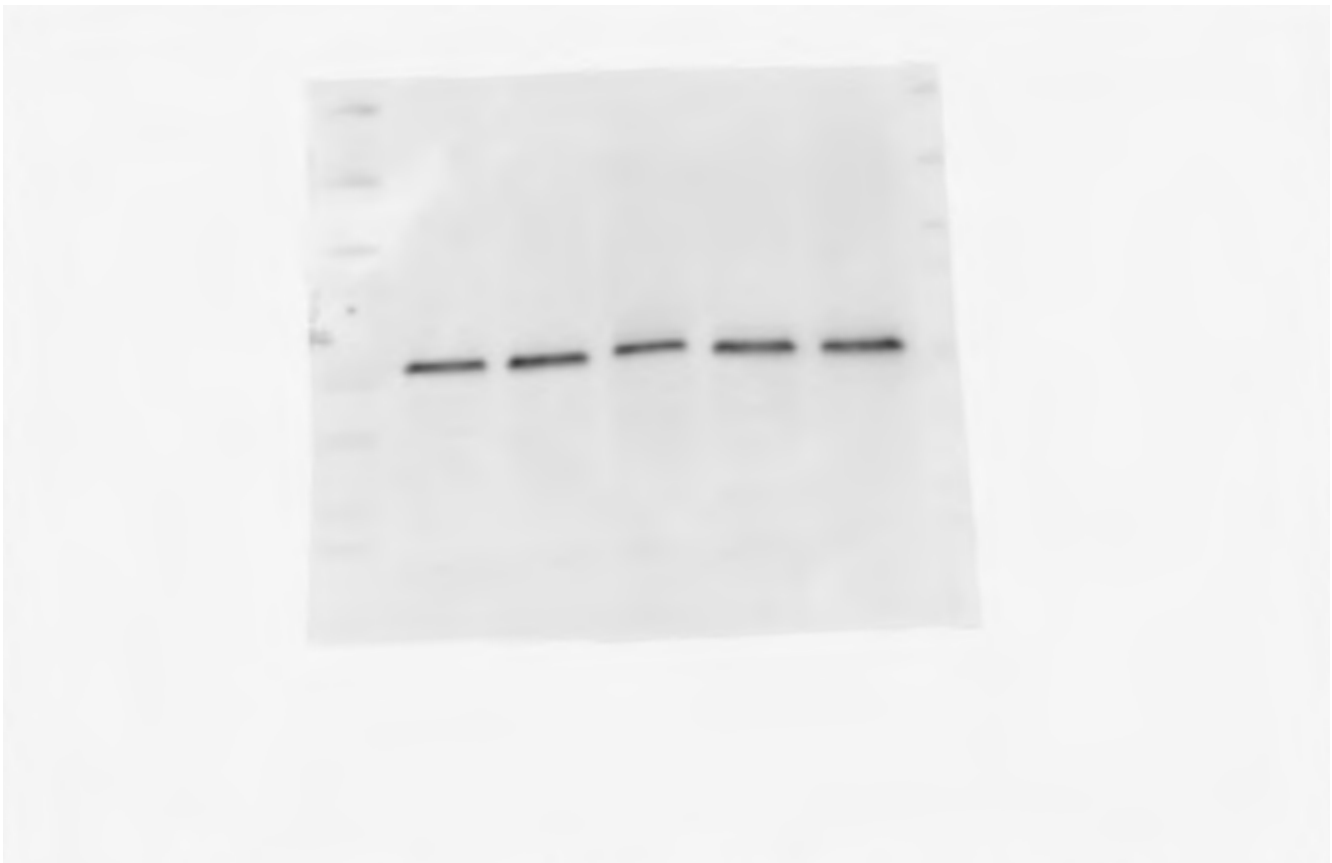


Figure S3 Western blot for αTubulin protein expression in RCC cell lines. From left, molecular weight marker, ACHN, A498, A704, 769-P, 786-O.

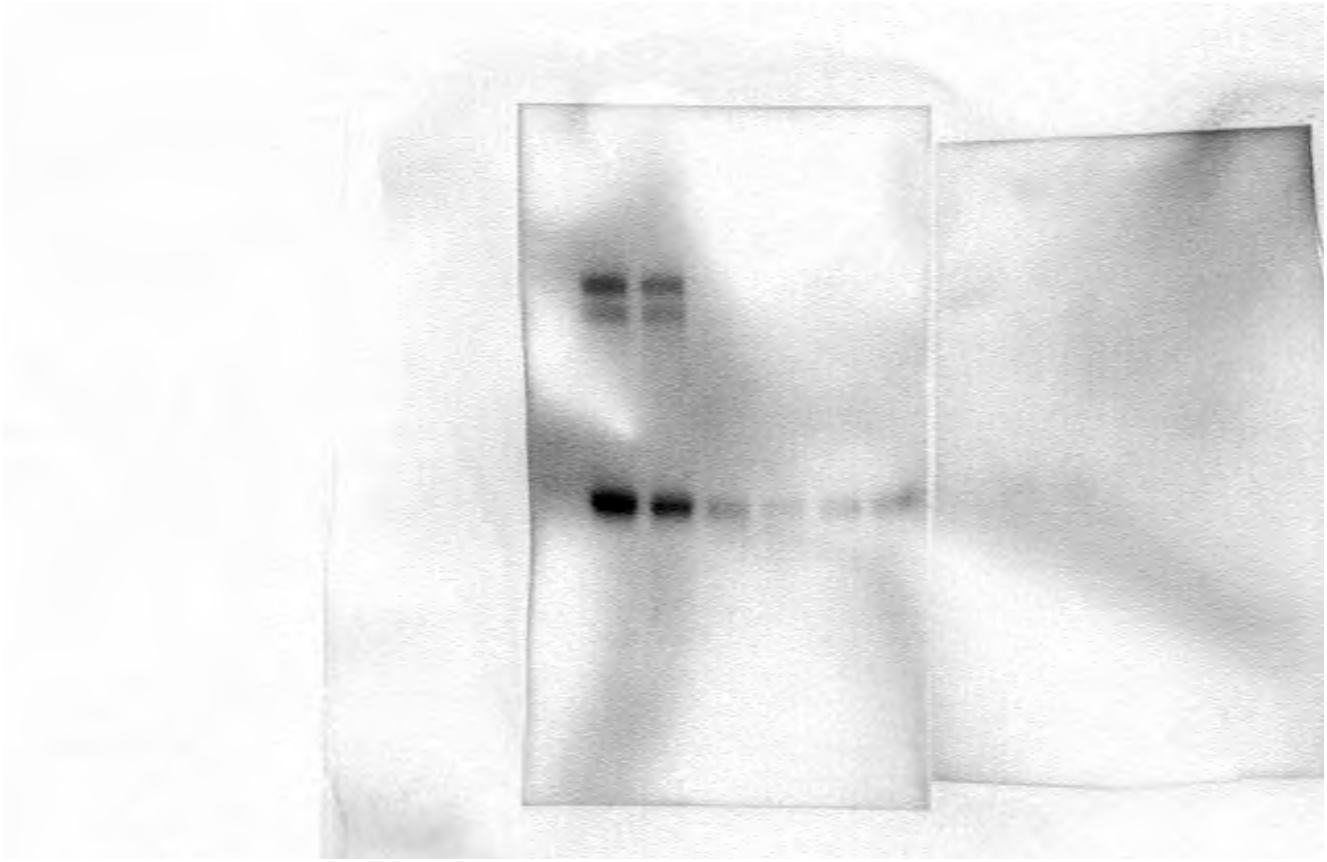


Figure S4 .Western blot for FGFR4 protein expression in A498 cell line after siFGFR4 transfection. From left, Control (treatment free), Negative control, siFGFR4-1(5nM), siFGFR4-2(5nM), siFGFR4-1(25nM), siFGFR4-2(25nM). The right side menbrane was external control.

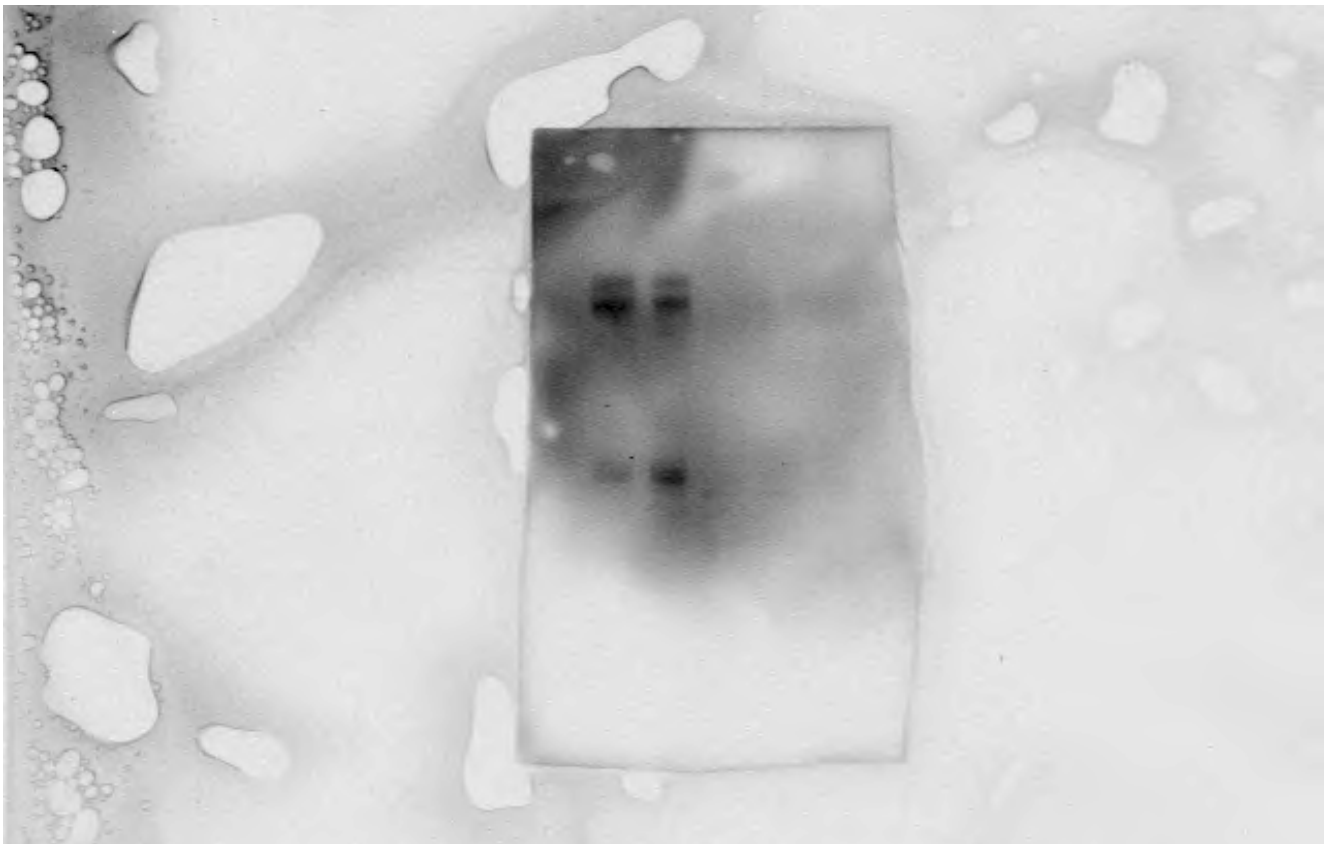


Figure S5 .Western blot for FGFR4 protein expression in A704 cell line after siFGFR4 transfection. From left (right gel) , Control (treatment free), Negative control, siFGFR4-1(5nM), siFGFR4-2(5nM), siFGFR4-1(25nM), siFGFR4-2(25nM).

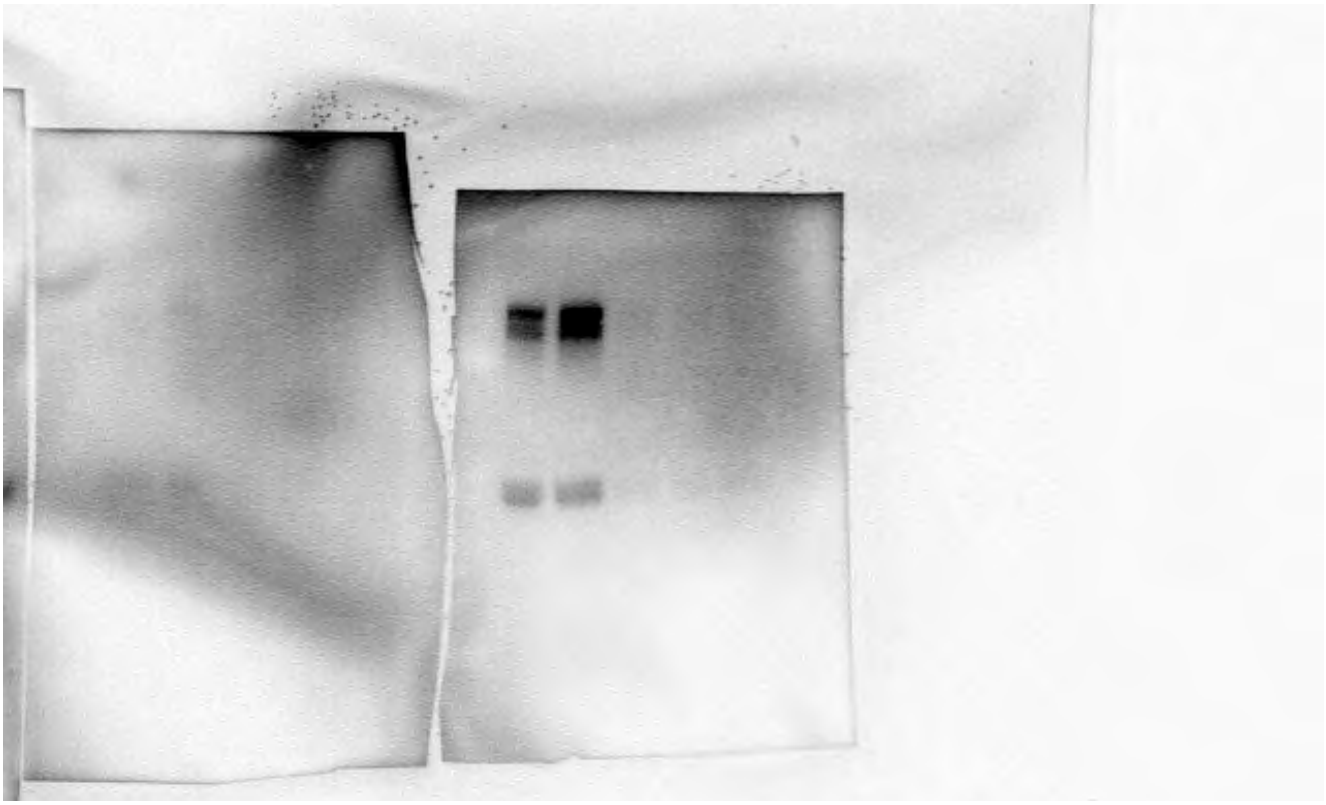


Figure S6 Western blot for FGFR4 protein expression in 769P cell line after siFGFR4 transfection. From left (right menbrane) , Control (treatment free), Negative control, siFGFR4-1(5nM), siFGFR4-2(5nM), siFGFR4-1(25nM), siFGFR4-2(25nM). the left side membrane was external control.

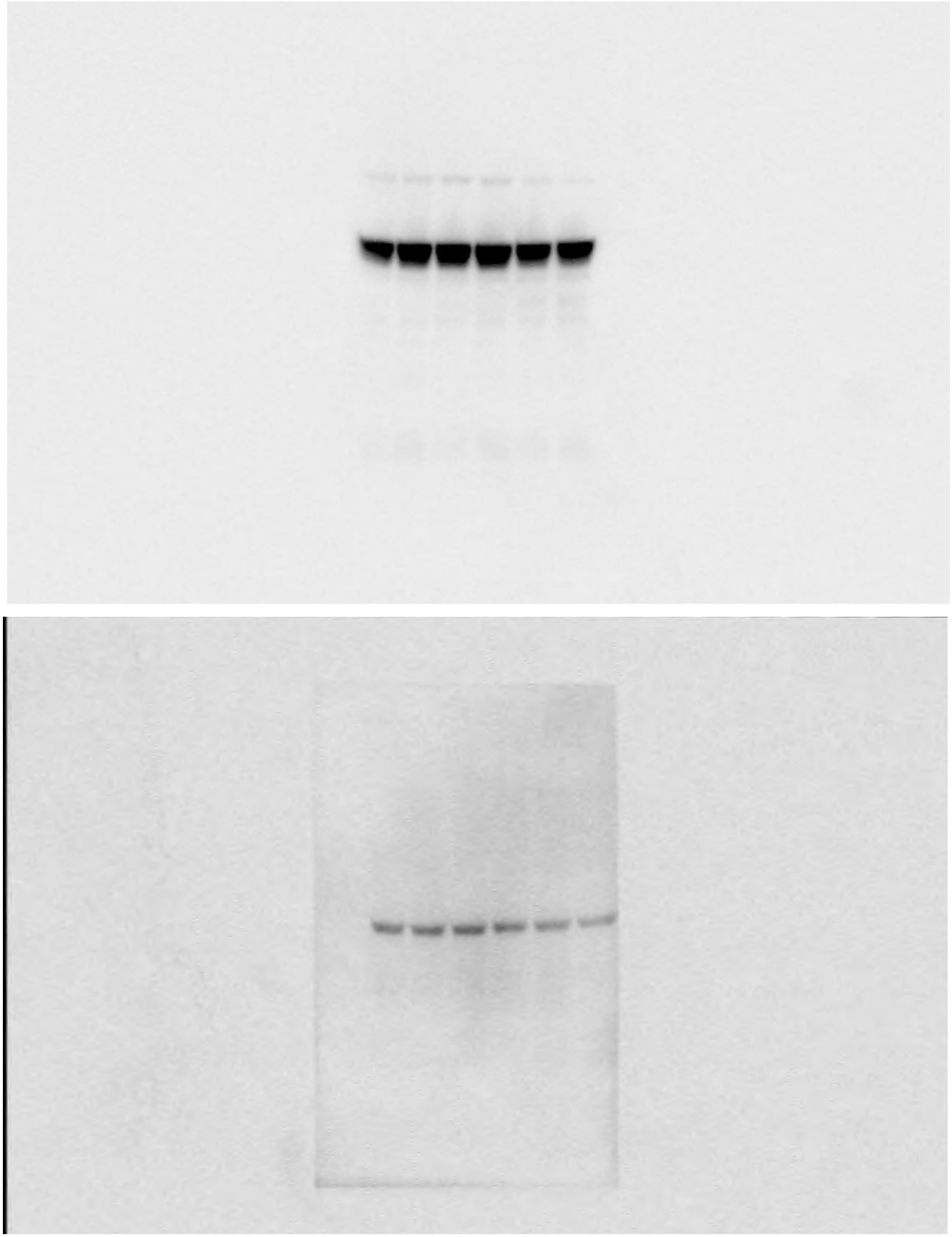


Figure S7 Western blot for AKT(Upper gel) and Phospho-AKT(Ser473, lower gel) protein expression in A498 cell line after siFGFR4 transfection. From left, Control (treatment free), Negative control, siFGFR4-1(5nM), siFGFR4-2(5nM), siFGFR4-1(25nM), siFGFR4-2(25nM).

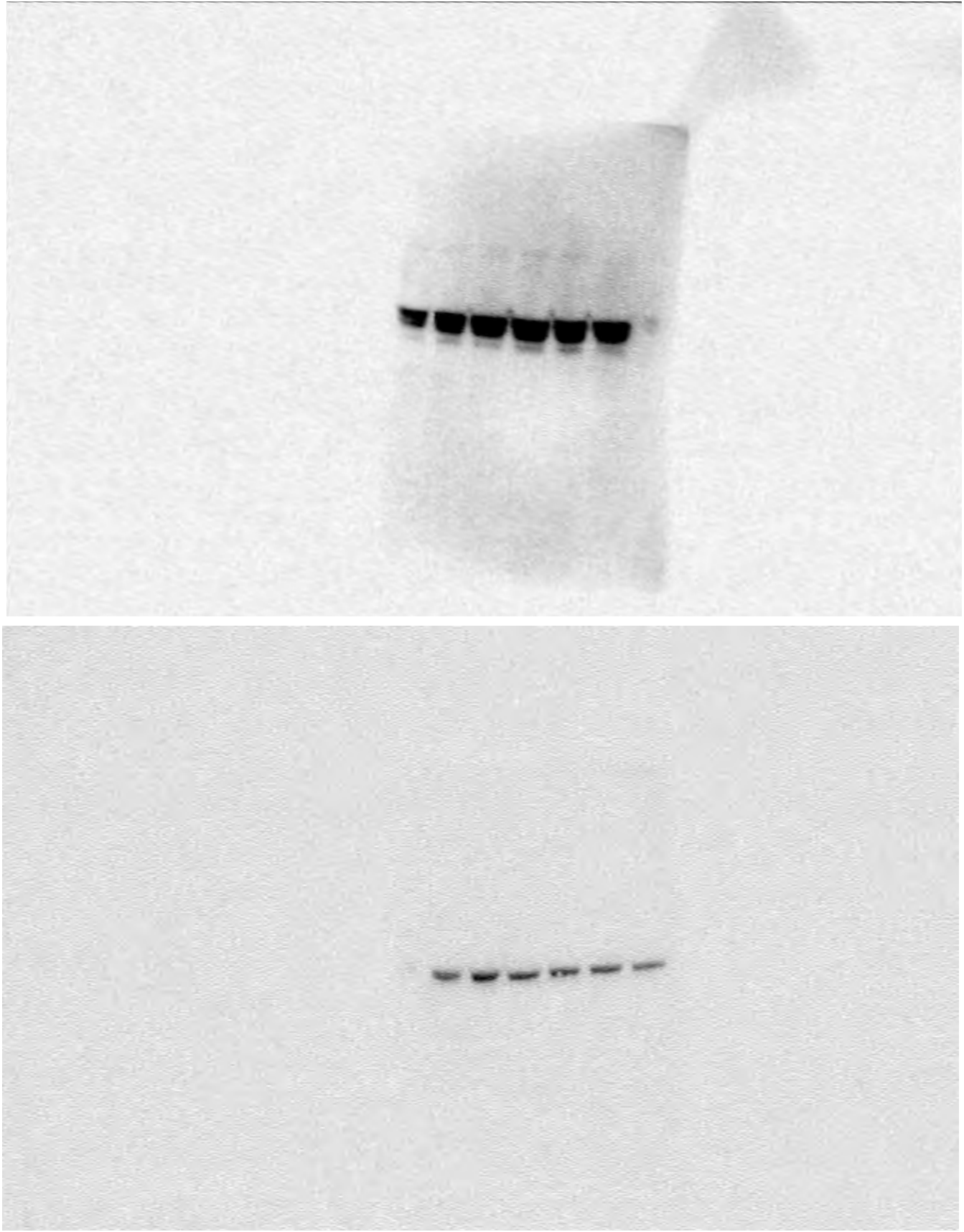


Figure S8 Western blot for AKT(Upper gel) and Phospho-AKT(Ser473, lower gel) protein expression in A704 cell line after siFGFR4 transfection. From left, Control (treatment free), Negative control, siFGFR4-1(5nM), siFGFR4-2(5nM), siFGFR4-1(25nM), siFGFR4-2(25nM).

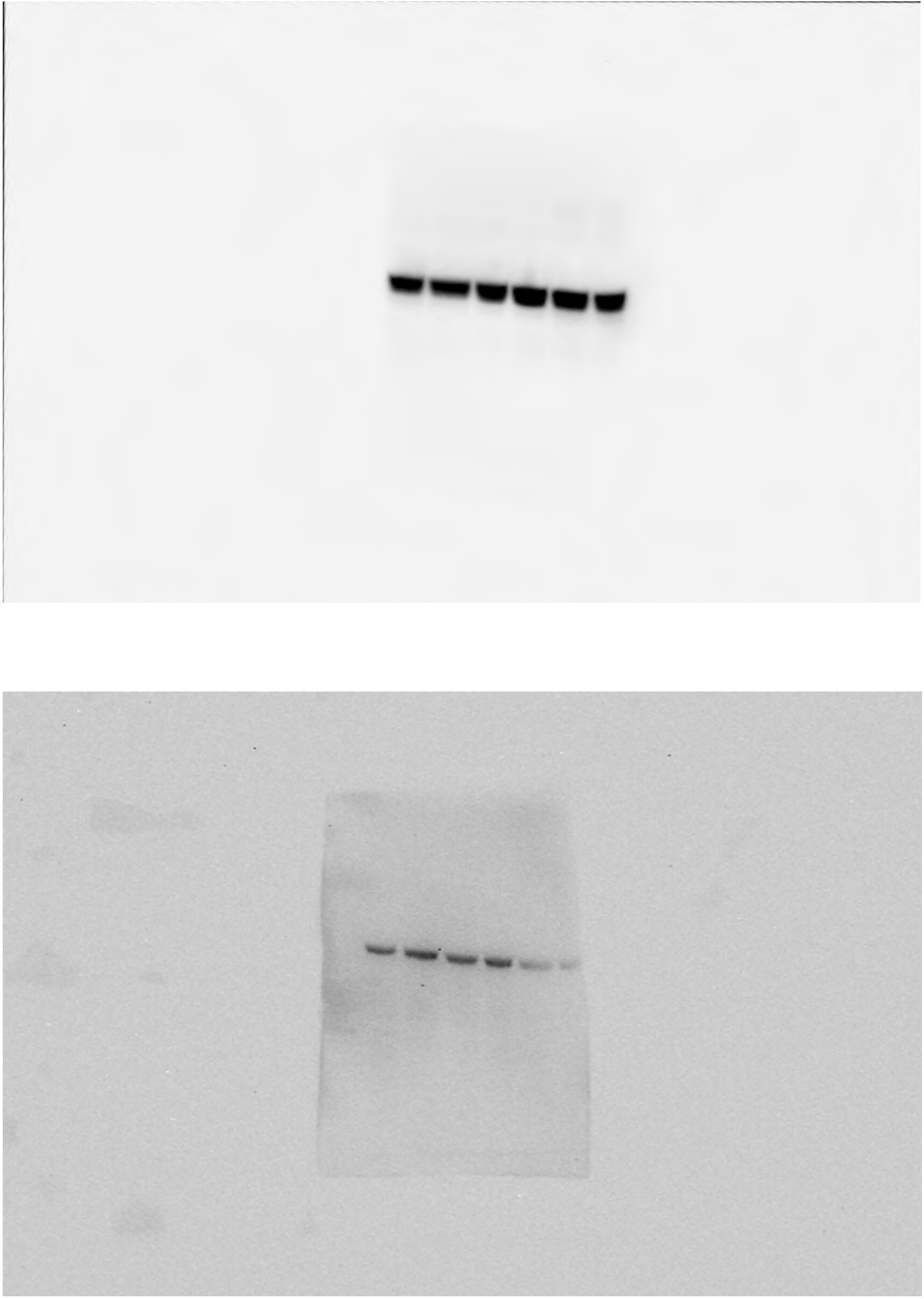


Figure S9 Western blot for AKT(Upper gel) and Phospho-AKT(Ser473, lower gel) protein expression in 769P cell line after siFGFR4 transfection. From left, Control (treatment free), Negative control, siFGFR4-1(5nM), siFGFR4-2(5nM), siFGFR4-1(25nM), siFGFR4-2(25nM).

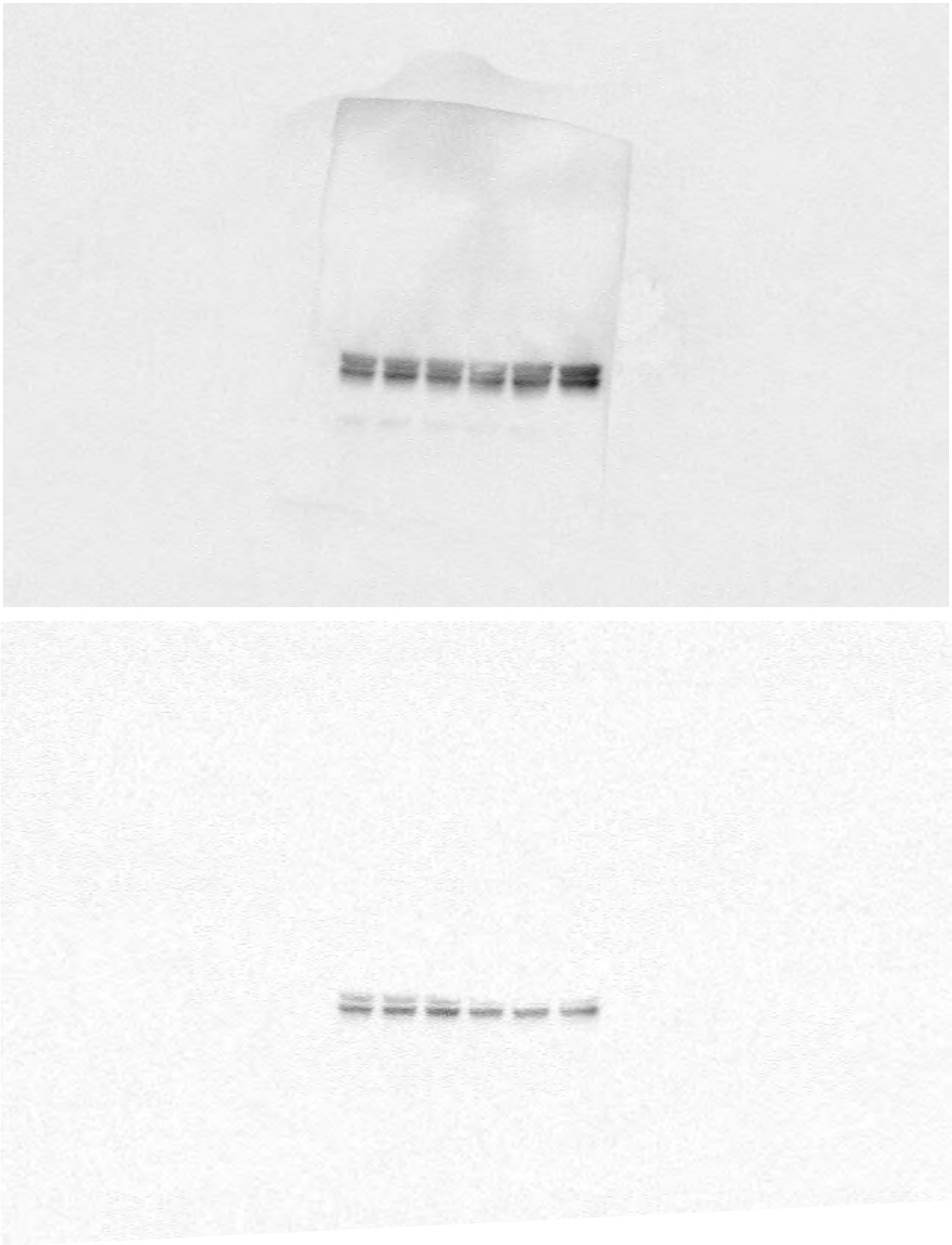


Figure S10 Western blot for ERK1/2 (Upper gel) and Phospho-ERK1/2 (Thr202/Tyr204, lower gel) protein expression in A498 cell line after siFGFR4 transfection. From left, Control (treatment free), Negative control, siFGFR4-1(5nM), siFGFR4-2(5nM), siFGFR4-1(25nM), siFGFR4-2(25nM).

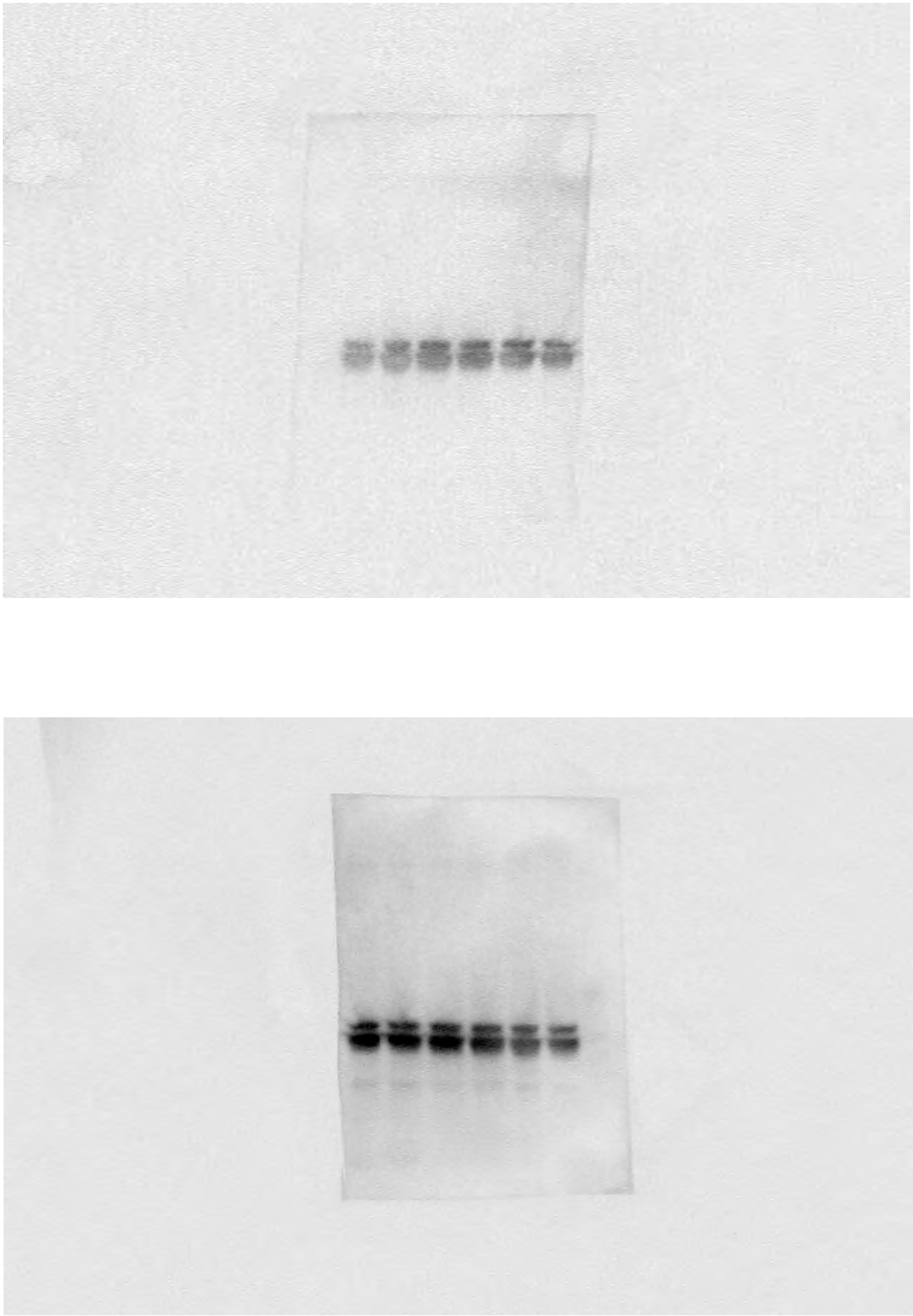


Figure S11 Western blot for ERK1/2 (Upper gel) and Phospho-ERK1/2 (Thr202/Tyr204, lower gel) protein expression in A704 cell line after siFGFR4 transfection. From left, Control (treatment free), Negative control, siFGFR4-1(5nM), siFGFR4-2(5nM), siFGFR4-1(25nM), siFGFR4-2(25nM).

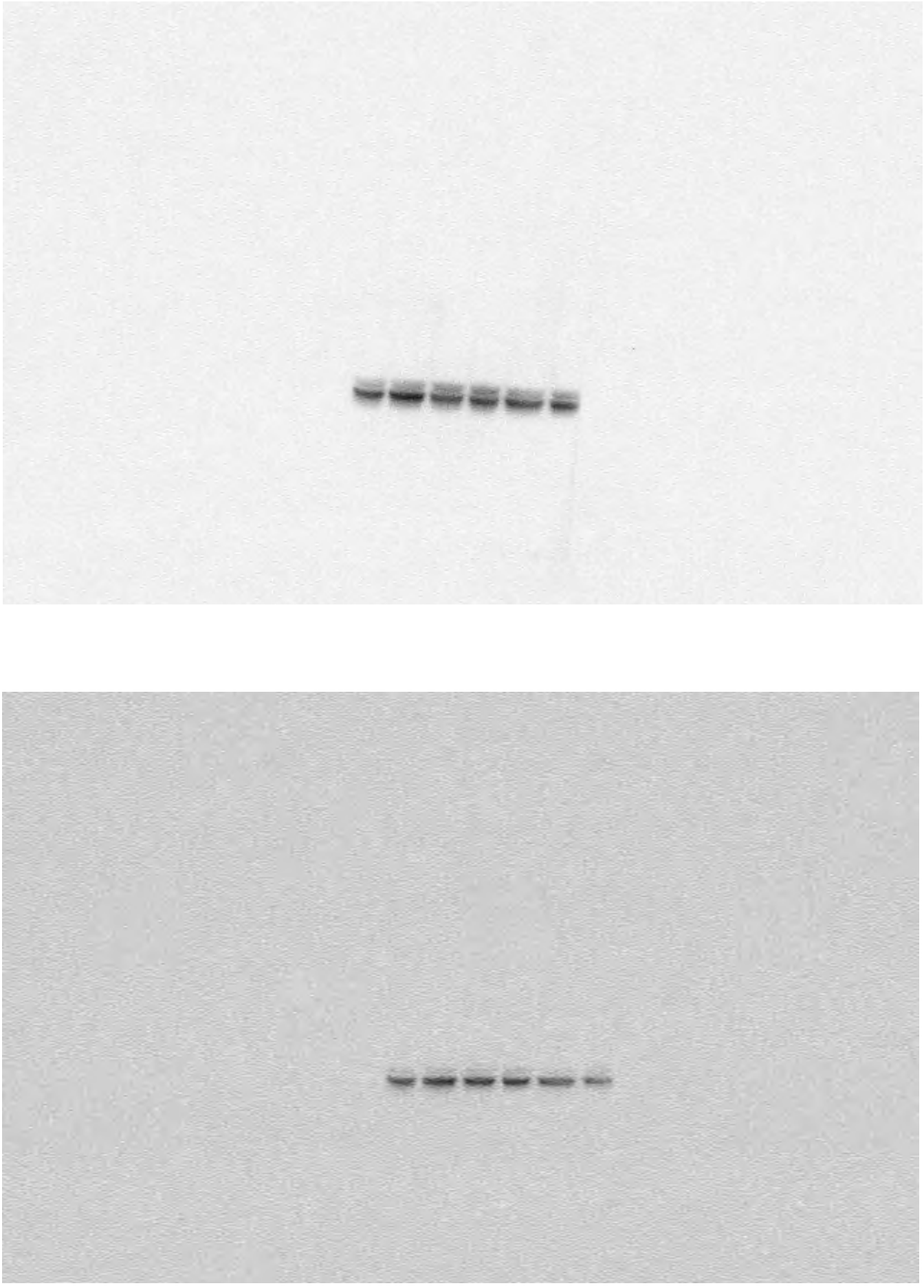


Figure S12

Western blot for ERK1/2 (Upper gel) and Phospho-ERK1/2 (Thr202/Tyr204, lower gel) protein expression in 769P cell line after siFGFR4 transfection. From left, Control (treatment free), Negative control, siFGFR4-1(5nM), siFGFR4-2(5nM), siFGFR4-1(25nM), siFGFR4-2(25nM).

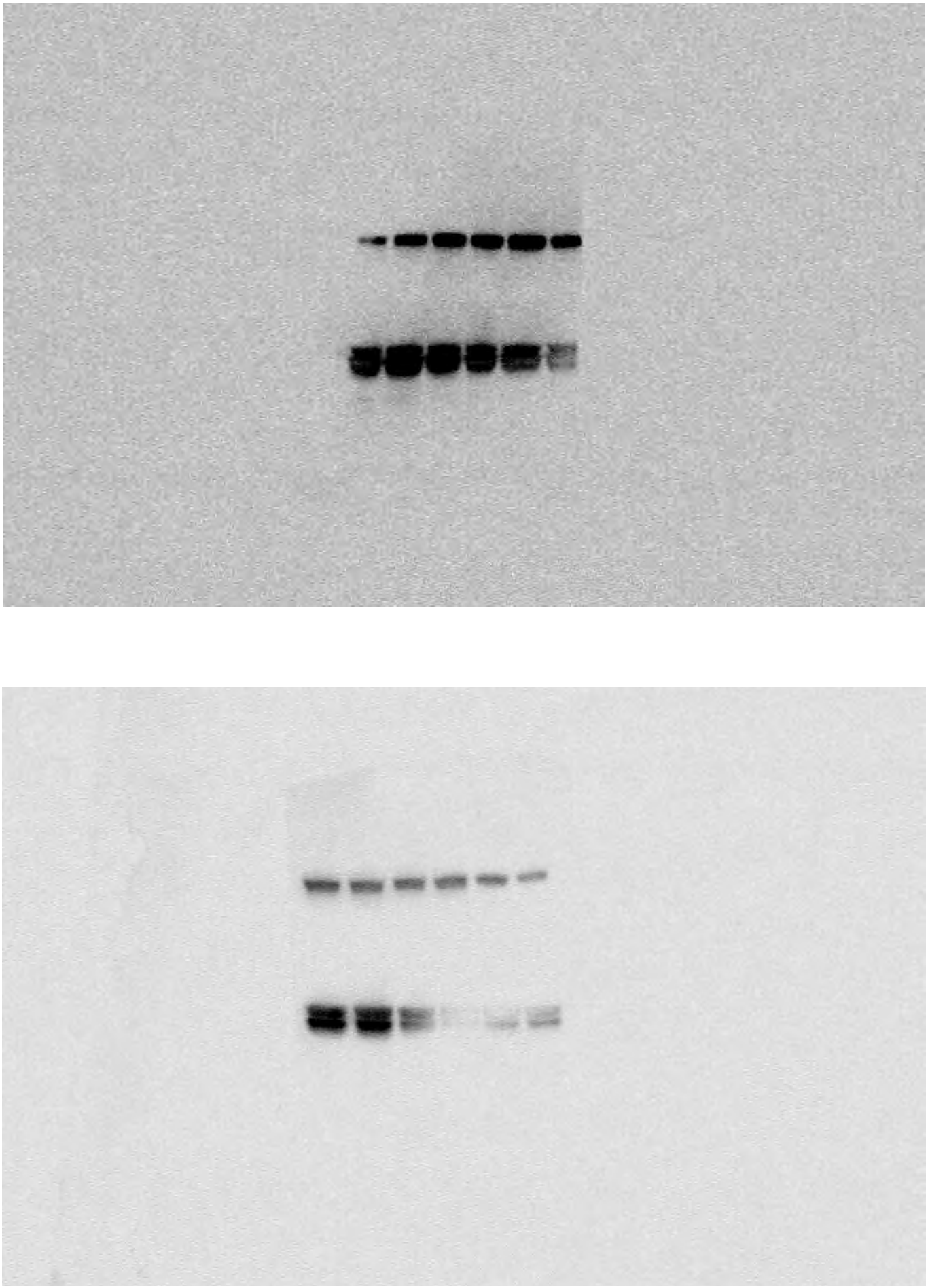


Figure S13 Western blot for STAT3 (Upper gel) and Phospho-STAT3 (Tyr705, lower gel) protein expression in A498 cell line after siFGFR4 transfection. From left, Control (treatment free), Negative control, siFGFR4-1(5nM), siFGFR4-2(5nM), siFGFR4-1(25nM), siFGFR4-2(25nM). The lower band of each gel is a remnant of Phosho-ERK1/2 experiment.

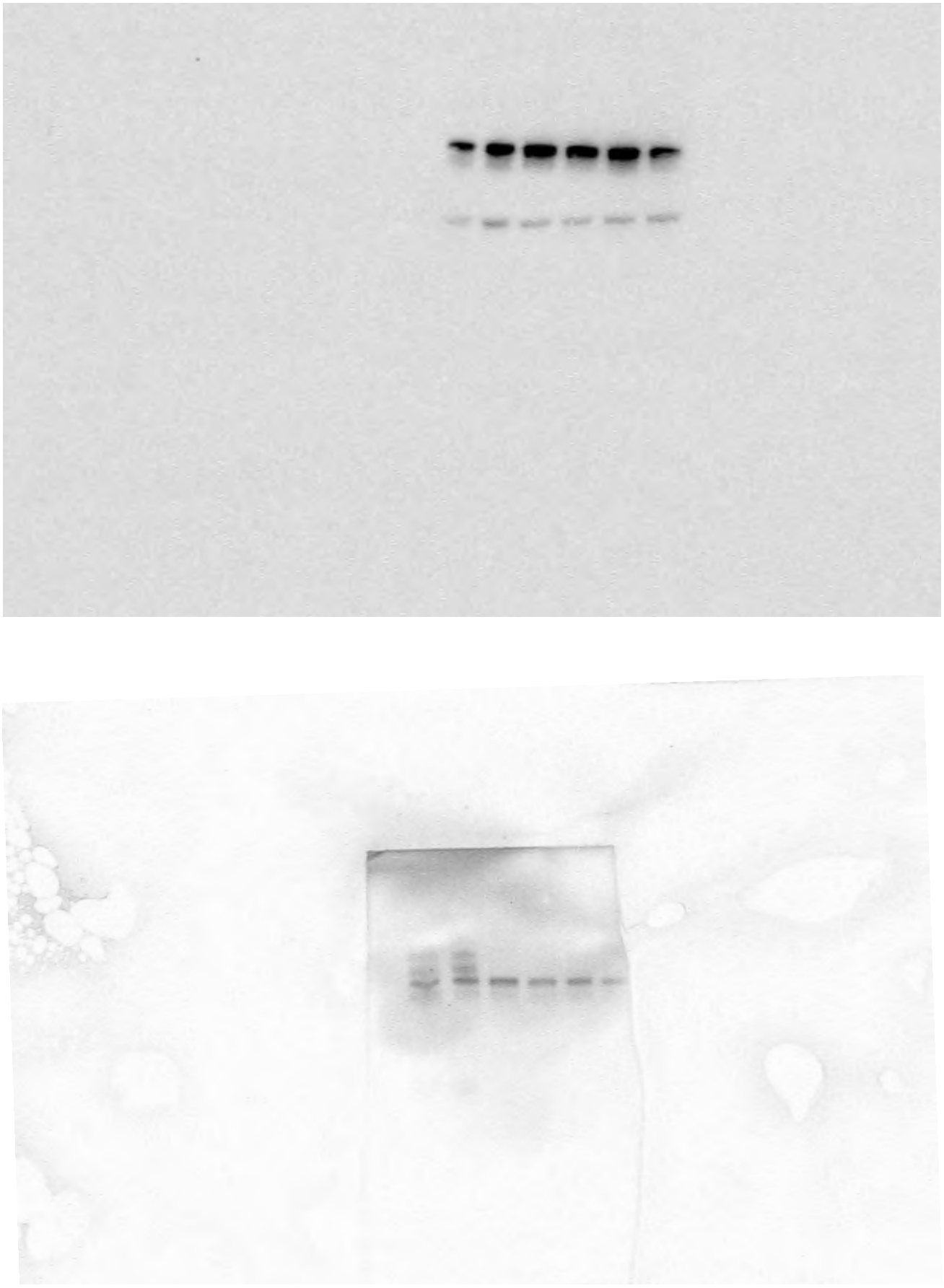


Figure S14 Western blot for STAT3 (Upper gel) and Phospho-STAT3 (Tyr705, lower gel) protein expression in A704 cell line after siFGFR4 transfection. From left, Control (treatment free), Negative control, siFGFR4-1(5nM), siFGFR4-2(5nM), siFGFR4-1(25nM), siFGFR4-2(25nM).

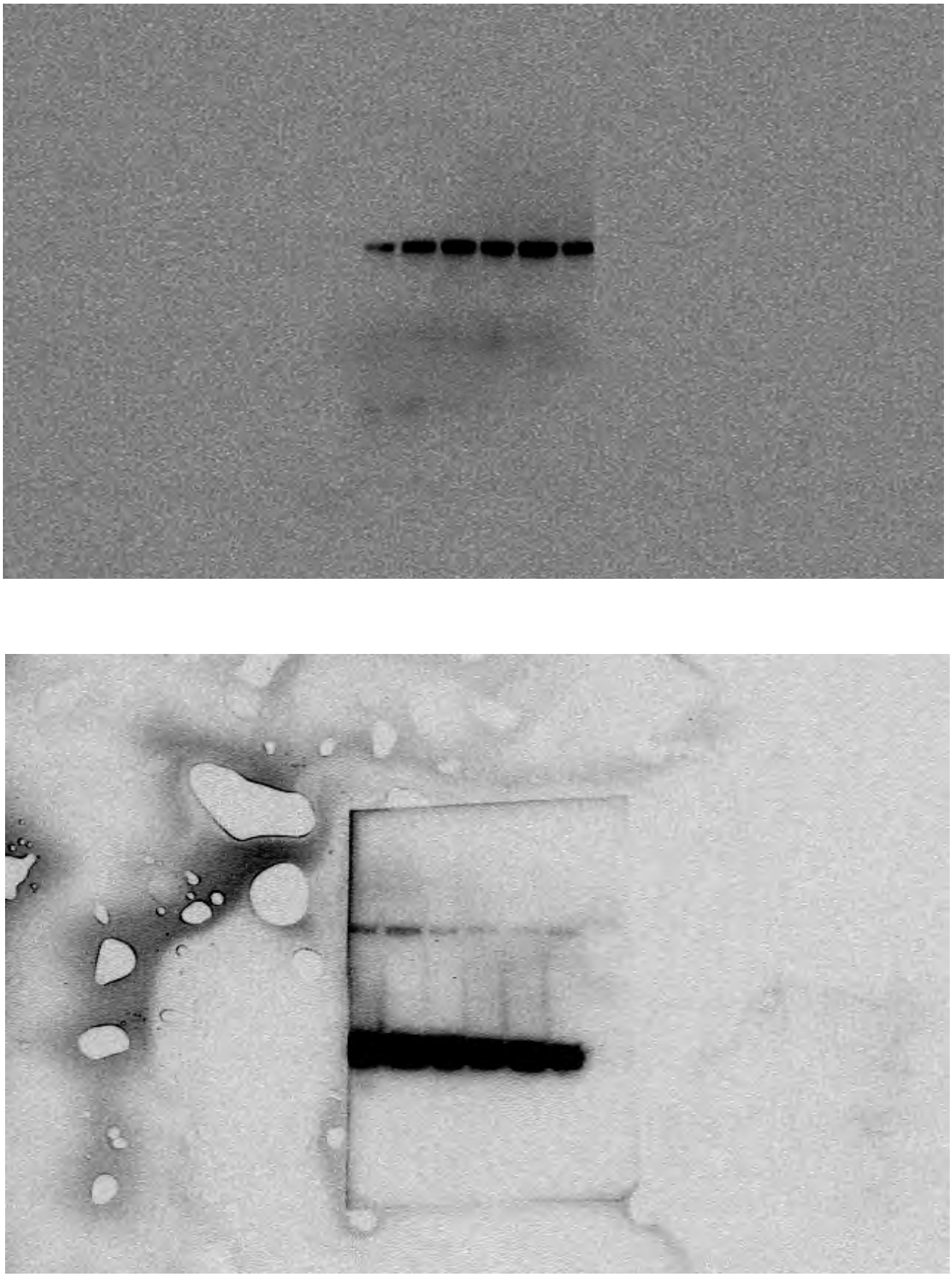


Figure S15 Western blot for STAT3 (Upper gel) and Phospho-STAT3 (Tyr705, lower gel) protein expression in 769P cell line after siFGFR4 transfection. From left, Control (treatment free), Negative control, siFGFR4-1(5nM), siFGFR4-2(5nM), siFGFR4-1(25nM), siFGFR4-2(25nM).

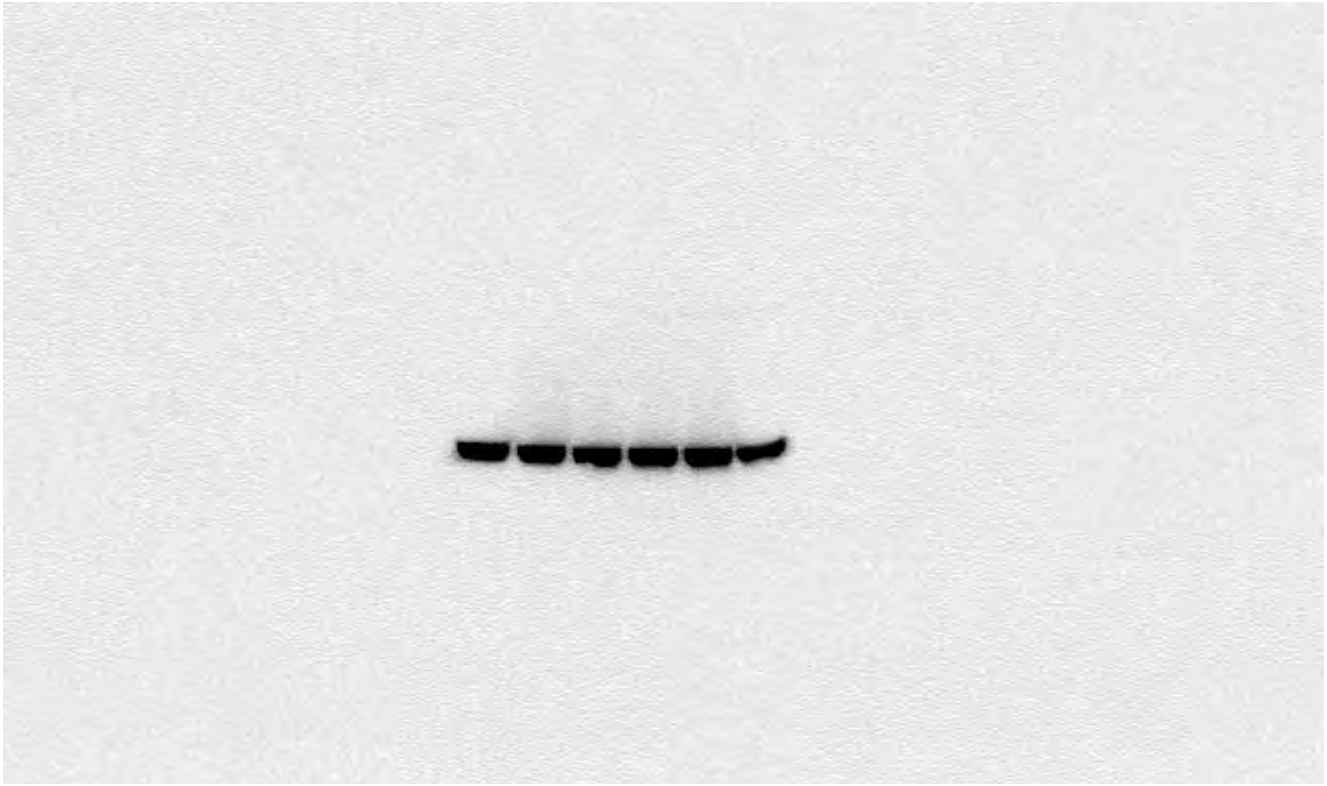


Figure S16 Western blot for α Tubulin expression of A498 cell after siFGFR4 transfection.

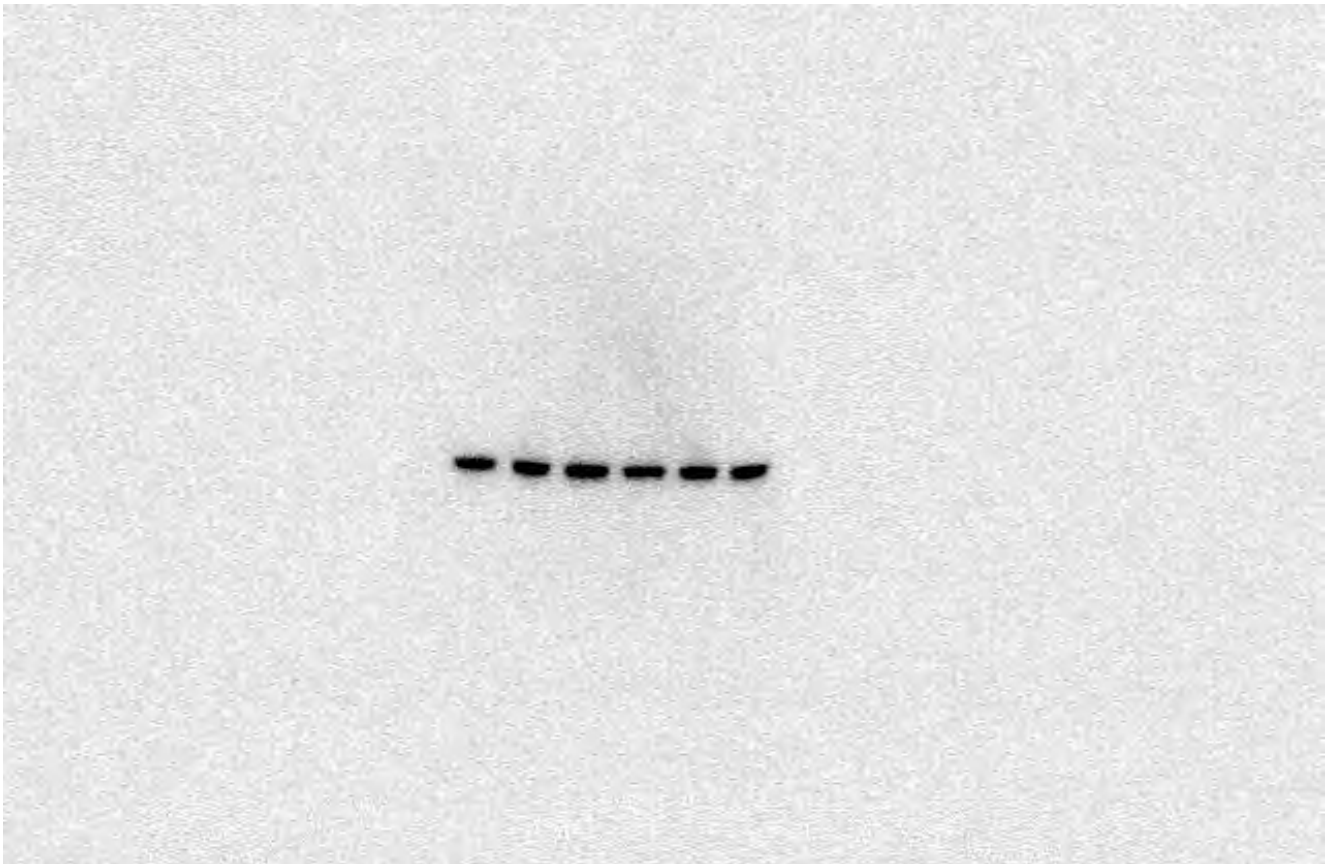


Figure S17 Western blot for α Tubulin expression of A704 cell after siFGFR4 transfection.

Figure S18 Western blot for α Tubulin expression of 769P cell after siFGFR4 transfection.

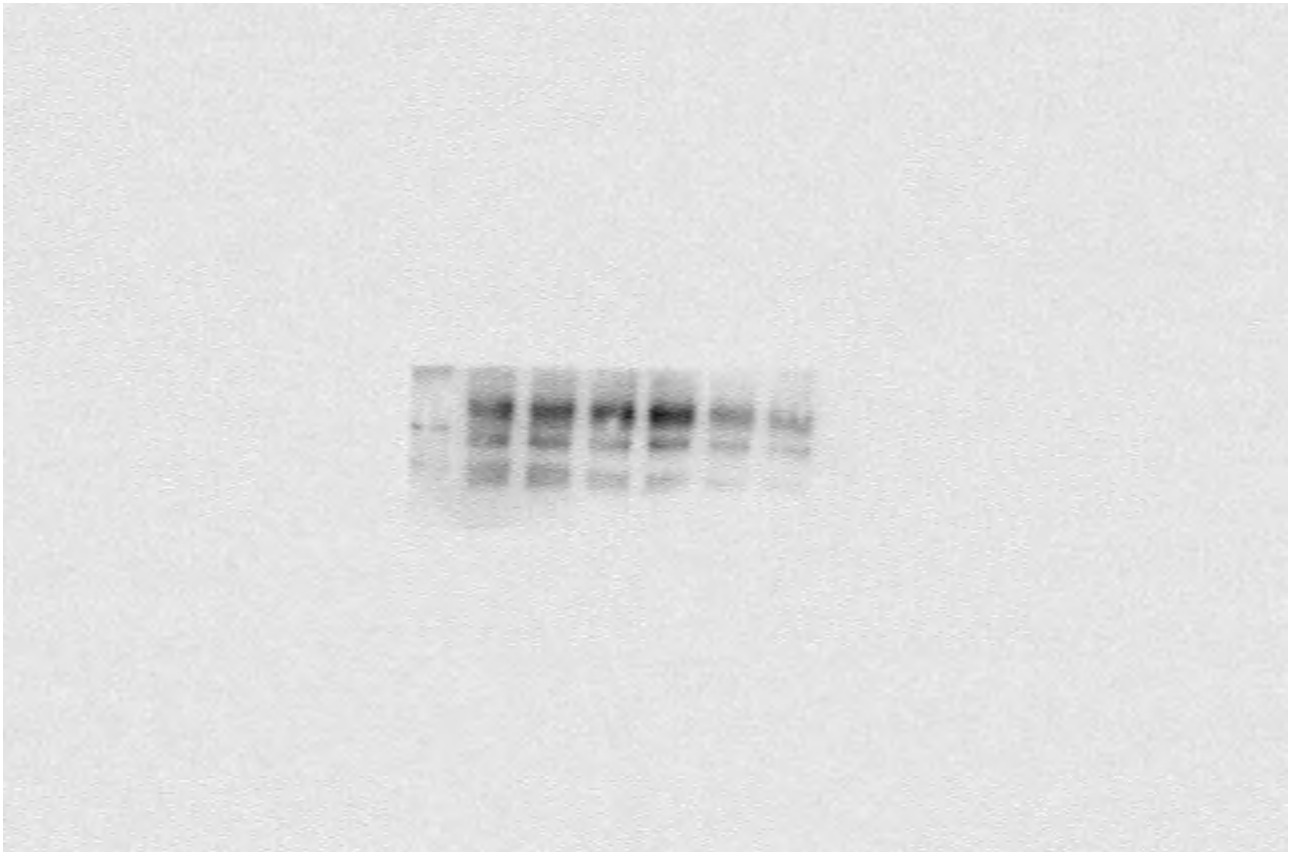


Figure S19 Western blot for phospho-FGFR(Thr653/654) of A498 cell line after BLU9931 treatment. From left, MW marker, Control, 1nM, 10nM, 100nM, 1 μM, 10 μM of BLU9931 treatment concentration. Gel were cut at 70 kDa and other side membrane was used in Western blots for other examination.

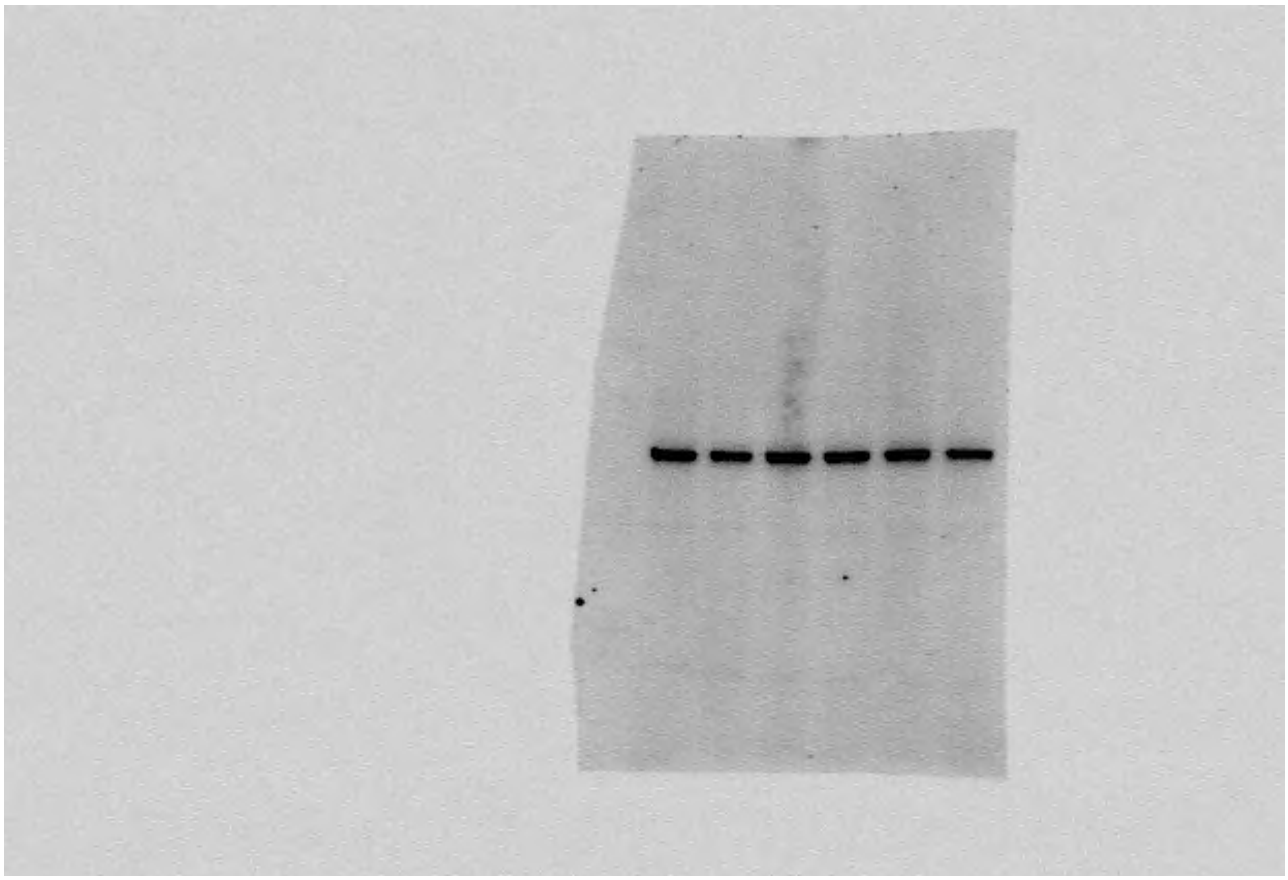


Figure S20 Western blot for α-Tubulin of A498 cell line after BLU9931 treatment. From left, Control, 1nM, 10nM, 100nM, 1 μM, 10 μM of BLU9931 treatment concentration.

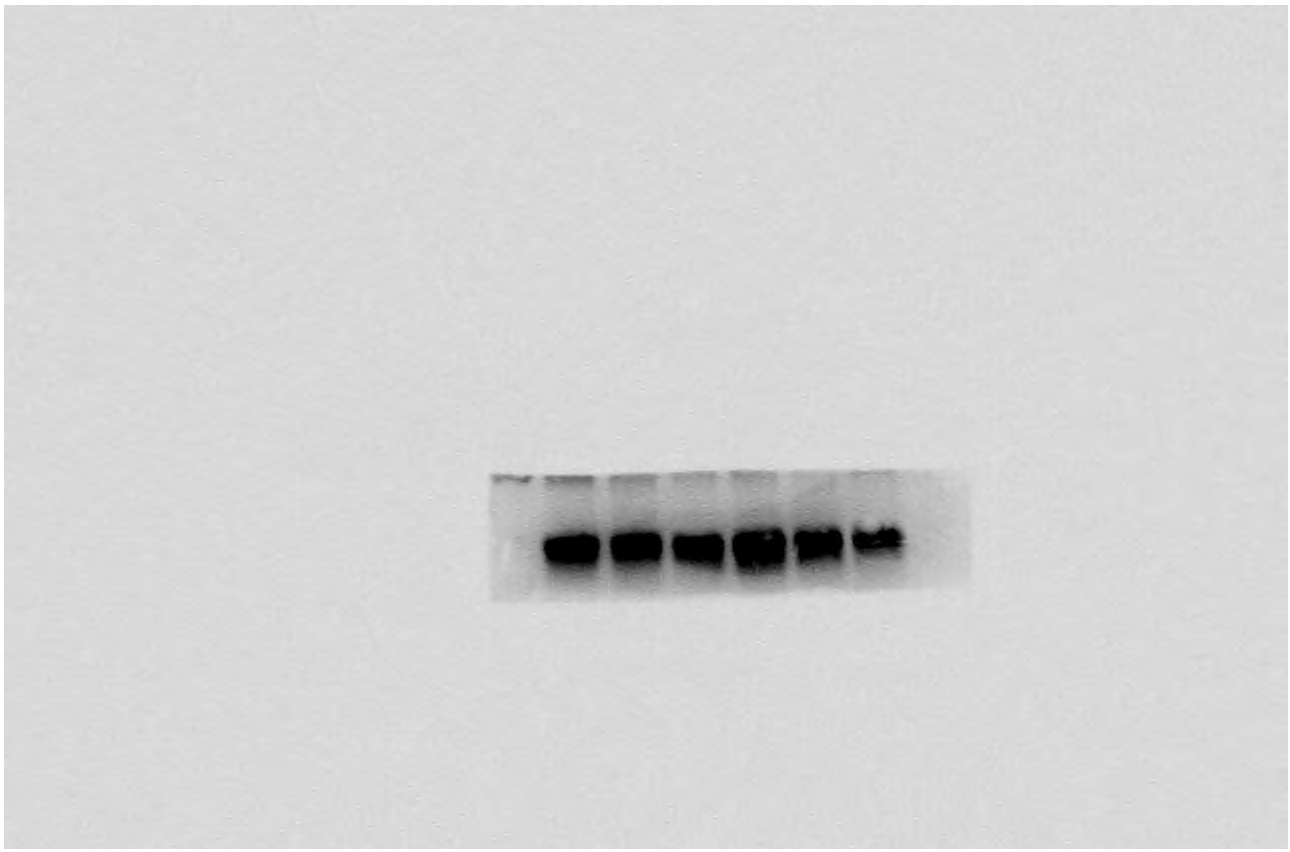


Figure S21 Western blot for AKT of A498 cell line after BLU9931 treatment.
From left, Control, 1nM, 10nM, 100nM, 1 μM, 10 μM of BLU9931 treatment concentration.

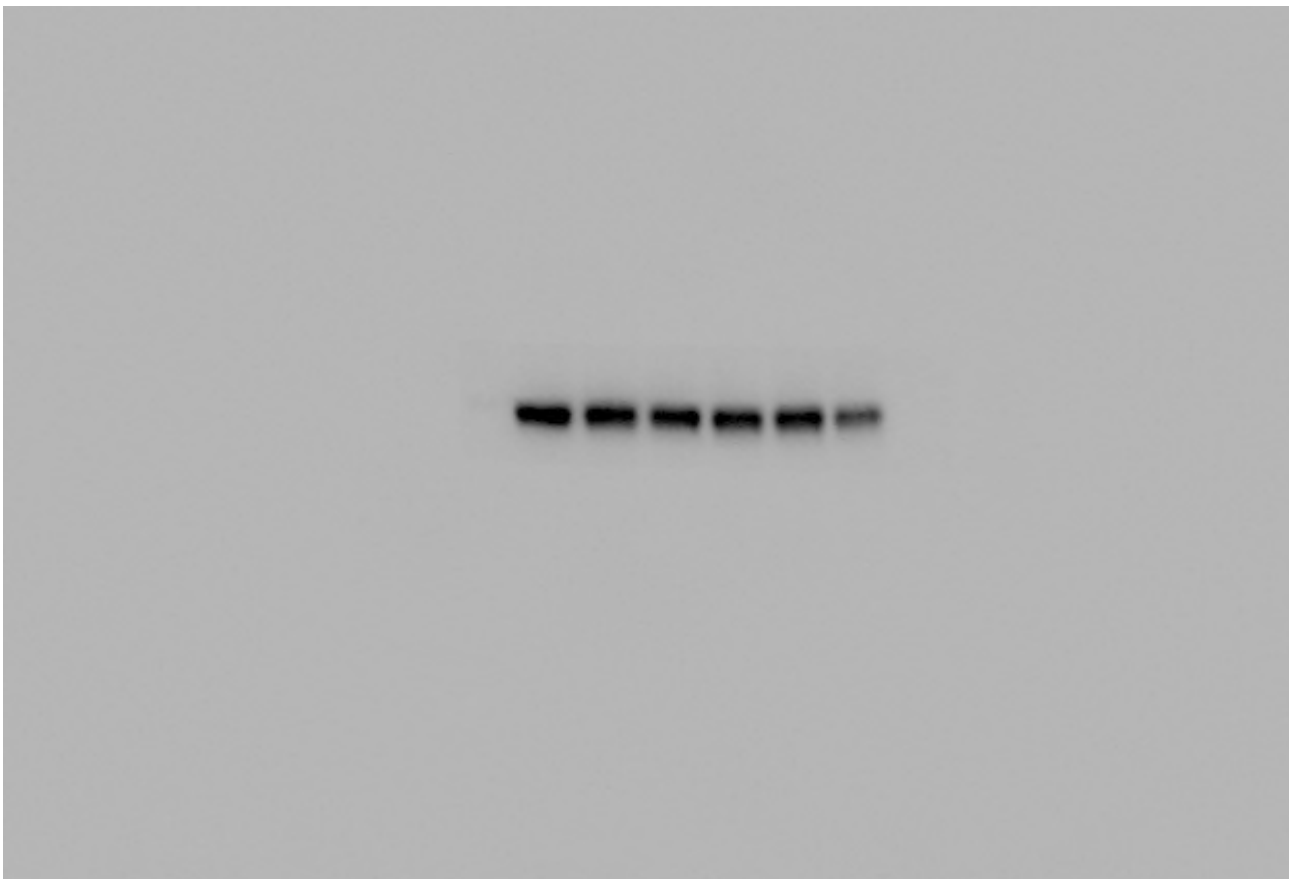


Figure S22 Western blot for phospho-AKT(Ser473) of A498 cell line after BLU9931 treatment.
From left, Control, 1nM, 10nM, 100nM, 1 μM, 10 μM of BLU9931 treatment concentration.

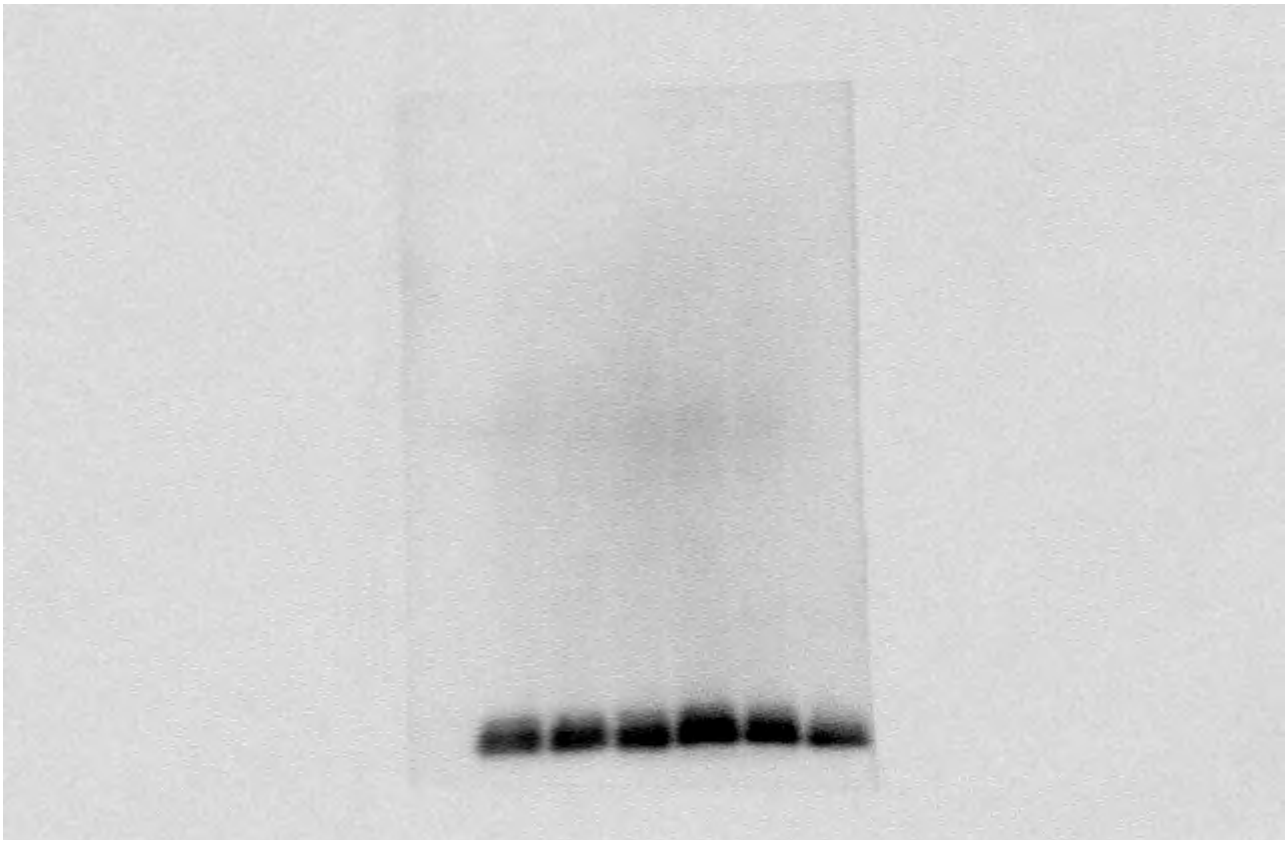


Figure S23 Western blot for 4EBP1 of A498 cell line after BLU9931 treatment.
From left, Control, 1nM, 10nM, 100nM, 1 μM, 10 μM of BLU9931 treatment concentration.

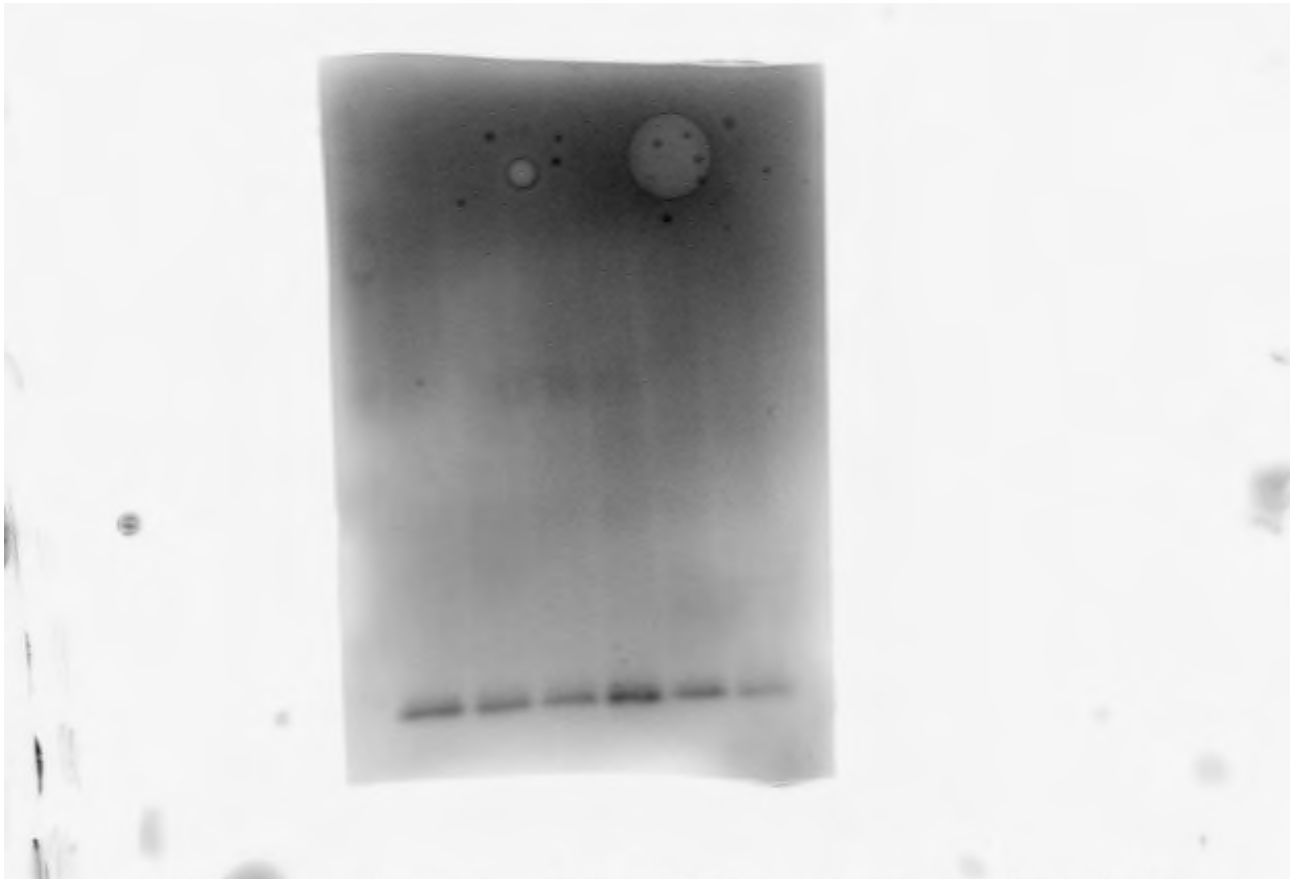


Figure S24 Western blot for phospho-4EBP1(Thr70) of A498 cell line after BLU9931 treatment.
From left, Control, 1nM, 10nM, 100nM, 1 μM, 10 μM of BLU9931 treatment concentration.

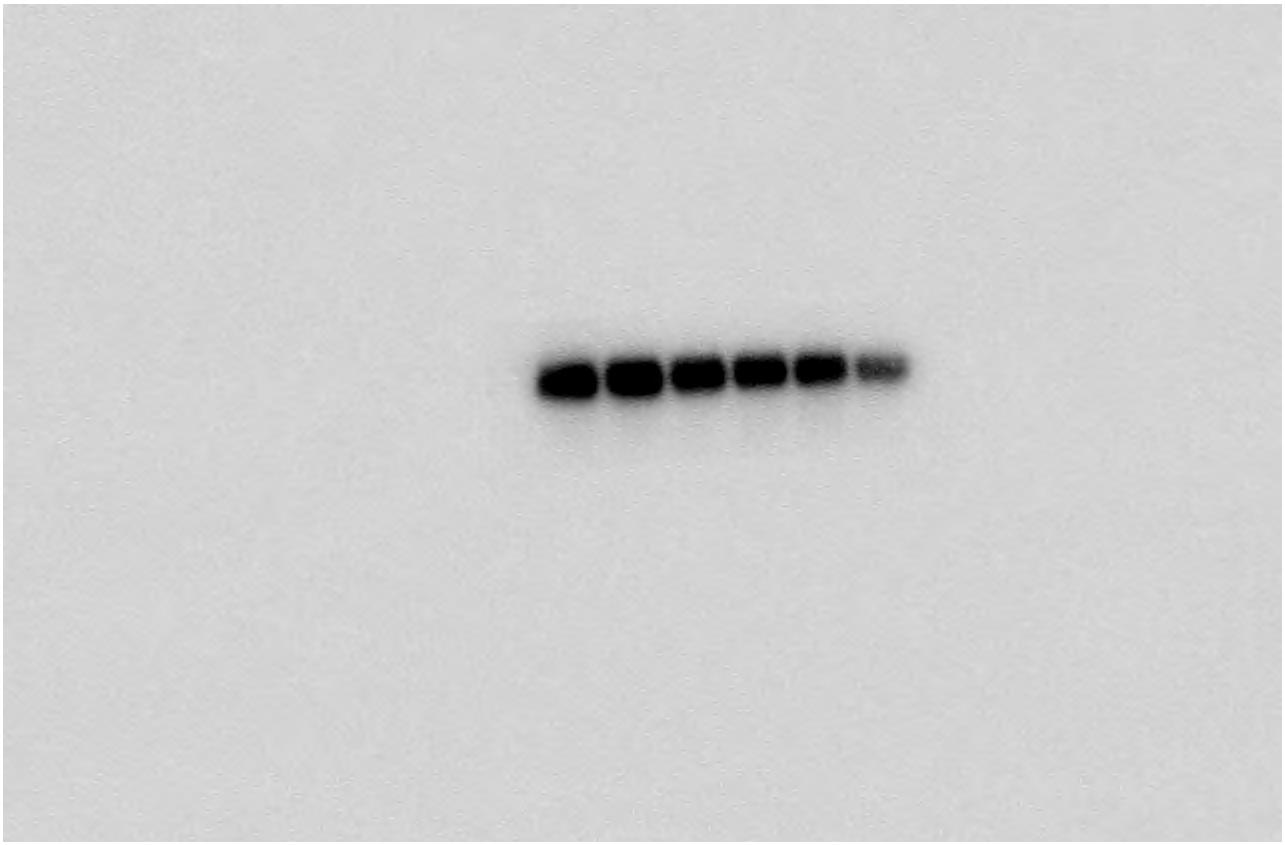


Figure S25 Western blot for S6RP of A498 cell line after BLU9931 treatment.
From left, Control, 1nM, 10nM, 100nM, 1 μM, 10 μM of BLU9931 treatment concentration.

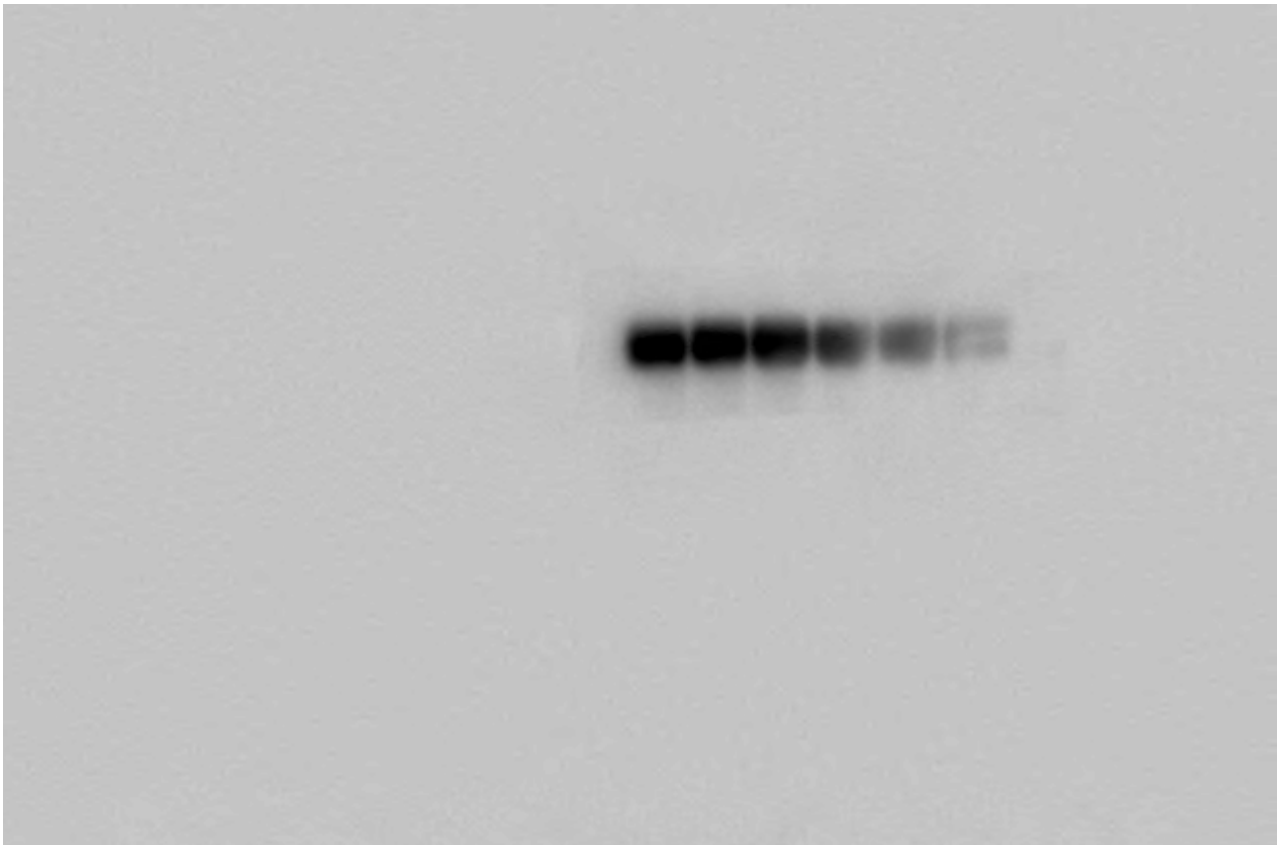


Figure S26 Western blot for phospho-S6RP(Ser235/236) of A498 cell line after BLU9931 treatment.
From left, Control, 1nM, 10nM, 100nM, 1 μM, 10 μM of BLU9931 treatment concentration.

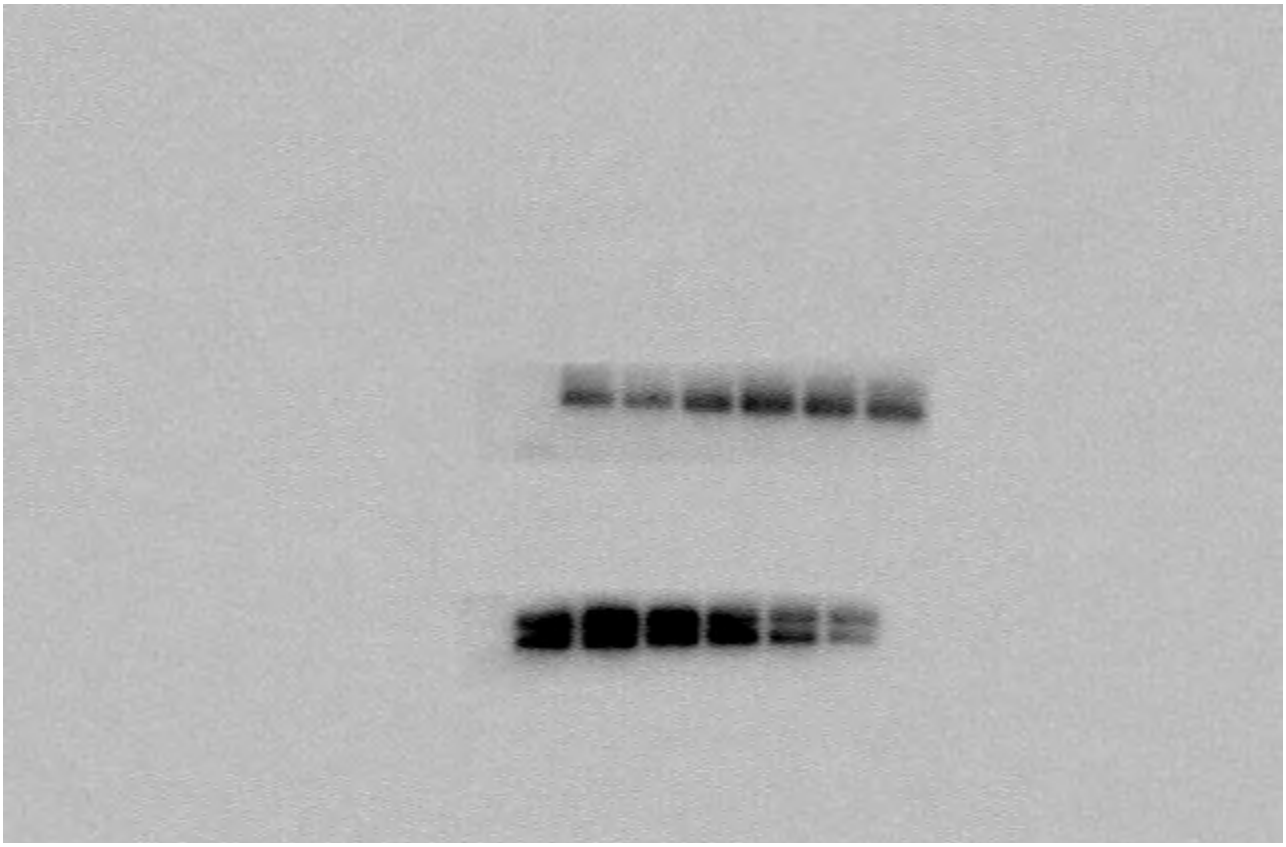


Figure S27 Western blot for ERK1/2 of A498 cell line after BLU9931 treatment (above).
From left, Control, 1nM, 10nM, 100nM, 1 μM, 10 μM of BLU9931 treatment concentration.
(The below membrane showed a reproductive result of phospho-ERK1/2.)

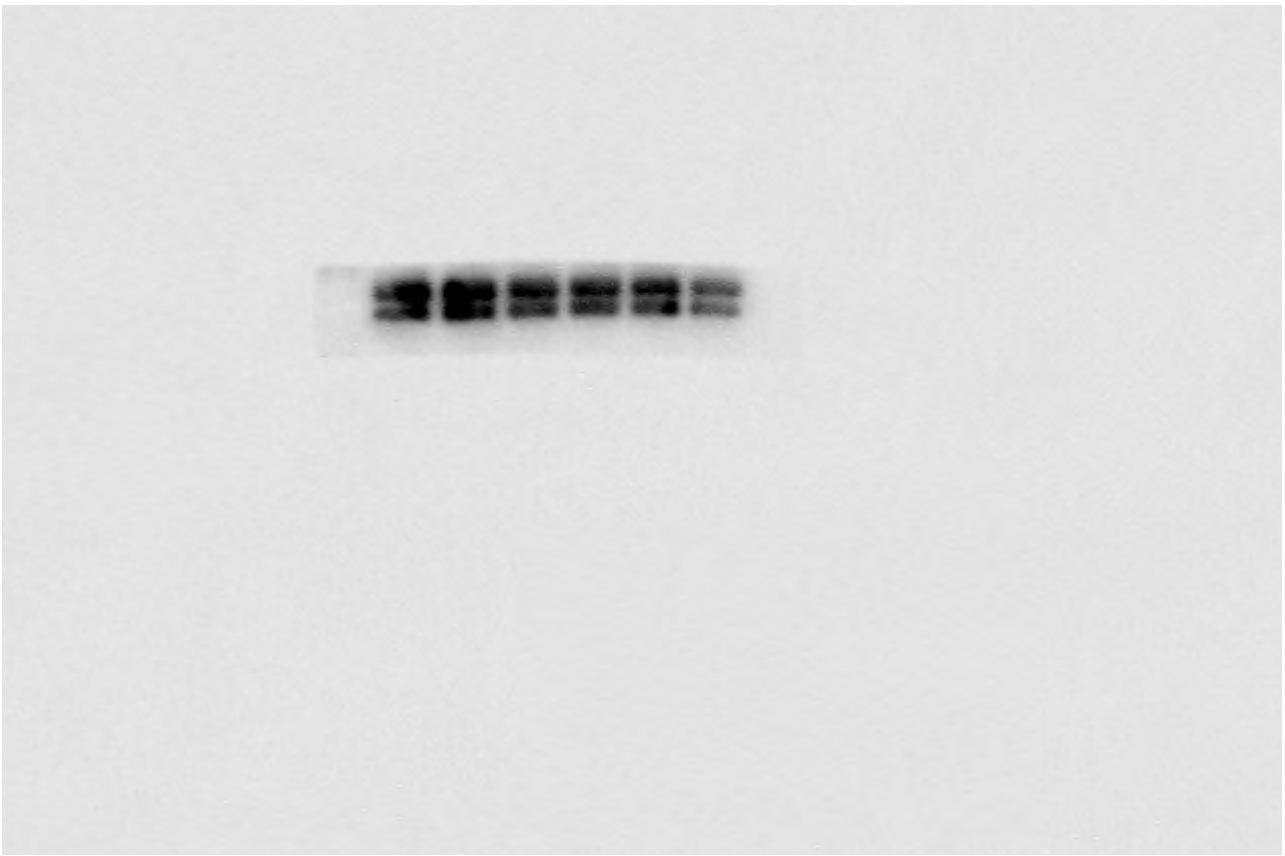


Figure S28 Western blot for phospho-ERK1/2(Thr202/Tyr204) of A498 cell line after BLU9931 treatment.
From left, Control, 1nM, 10nM, 100nM, 1 μM, 10 μM of BLU9931 treatment concentration.

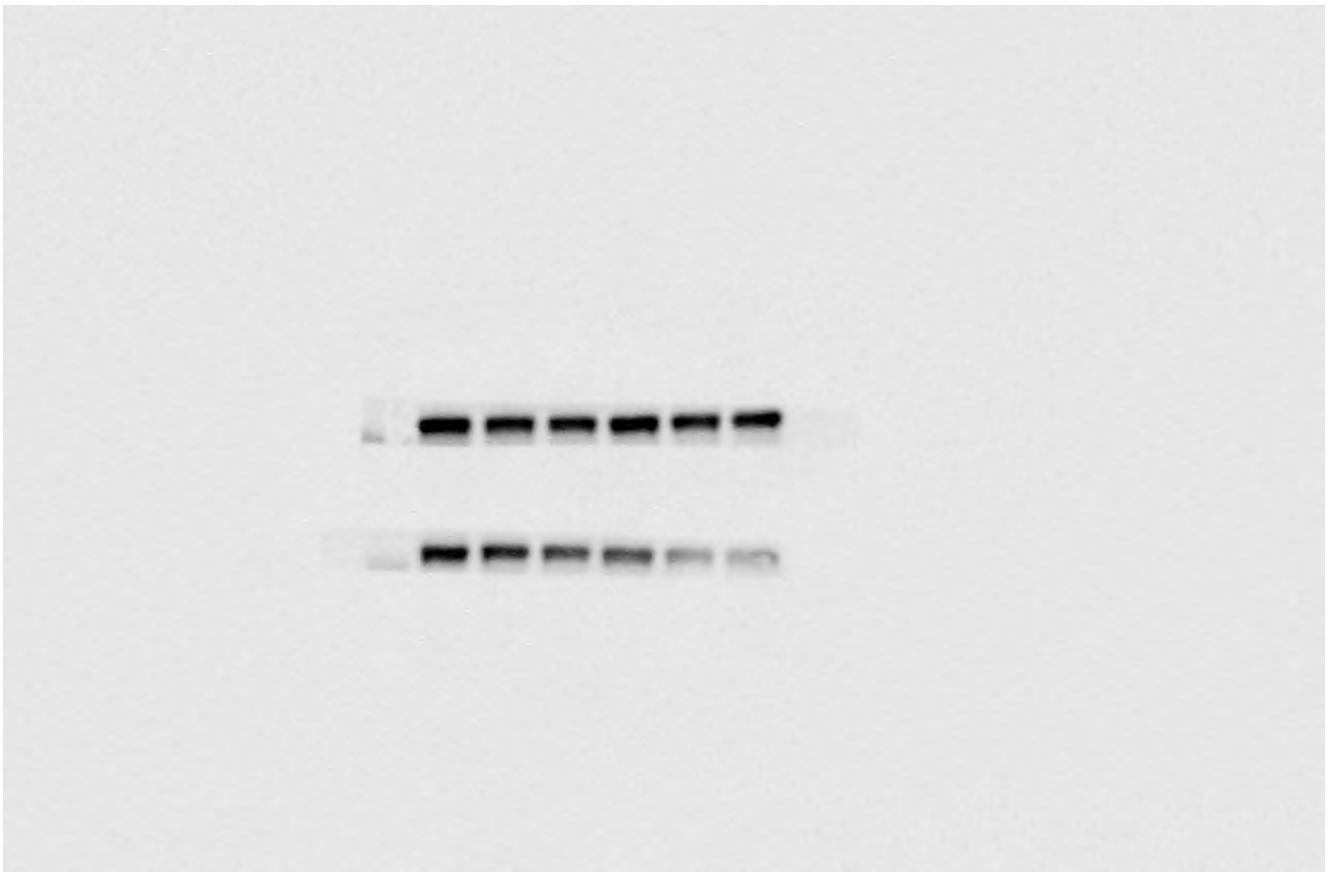


Figure S29 Western blot for STAT3(above) and phospho-STAT3(Tyr705, below) of A498 cell line after BLU9931 treatment.
From left, Control, 1nM, 10nM, 100nM, 1 μM, 10 μM of BLU9931 treatment concentration.

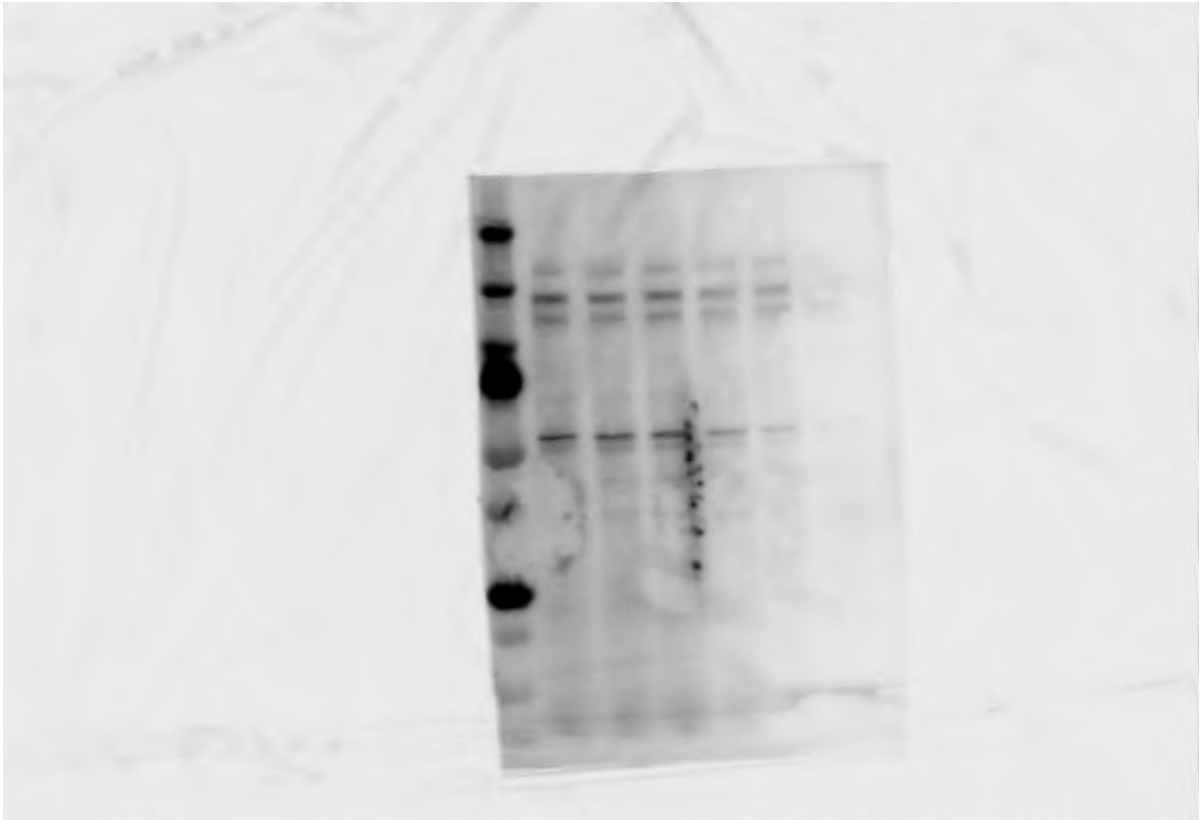


Figure S30 Western blot for phospho-FGFR(Thr653/654) of A704 cell line after BLU9931 treatment. From left, MW marker, Control, 1nM, 10nM, 100nM, 1 μM, 10 μM of BLU9931 treatment concentration.

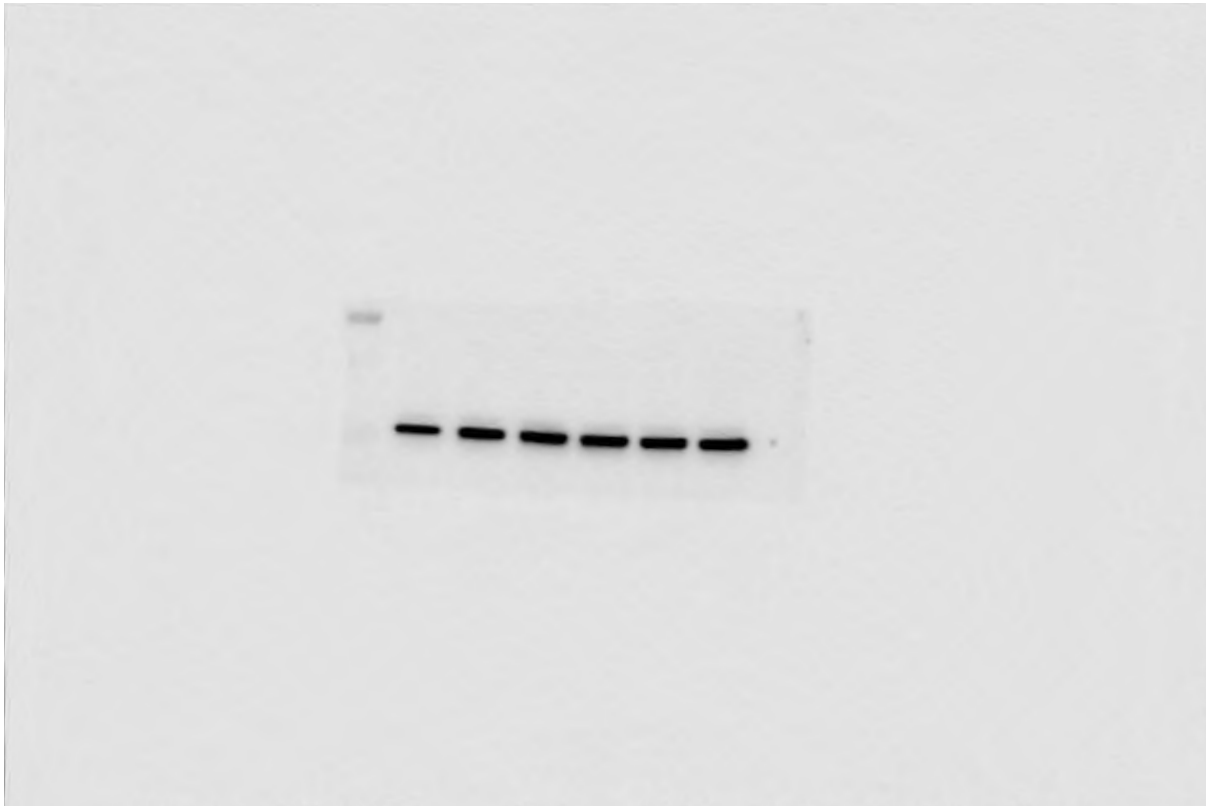


Figure S31 Western blot for α-Tubulin of A704 cell line after BLU9931 treatment. From left, Control, 1nM, 10nM, 100nM, 1 μM, 10 μM of BLU9931 treatment concentration.

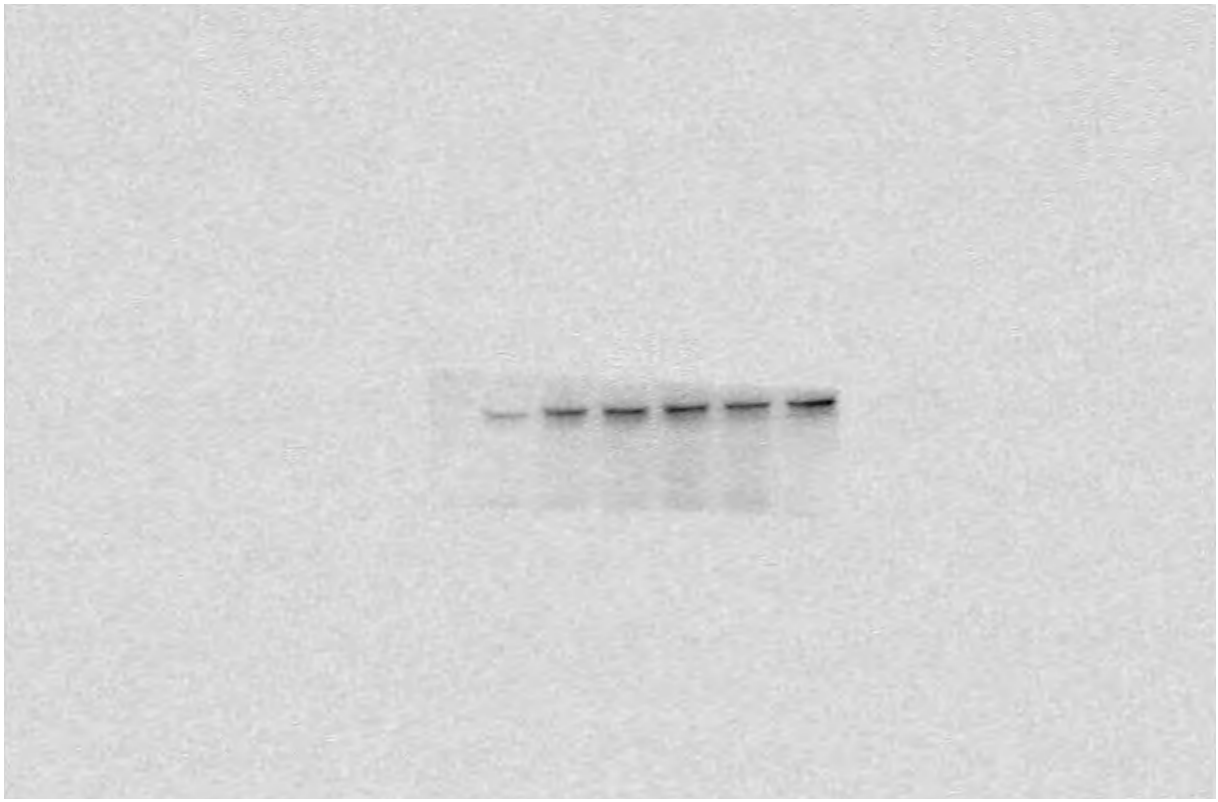


Figure S32 Western blot for AKT of A704 cell line after BLU9931 treatment.
From left, Control, 1nM, 10nM, 100nM, 1 μM, 10 μM of BLU9931 treatment concentration.

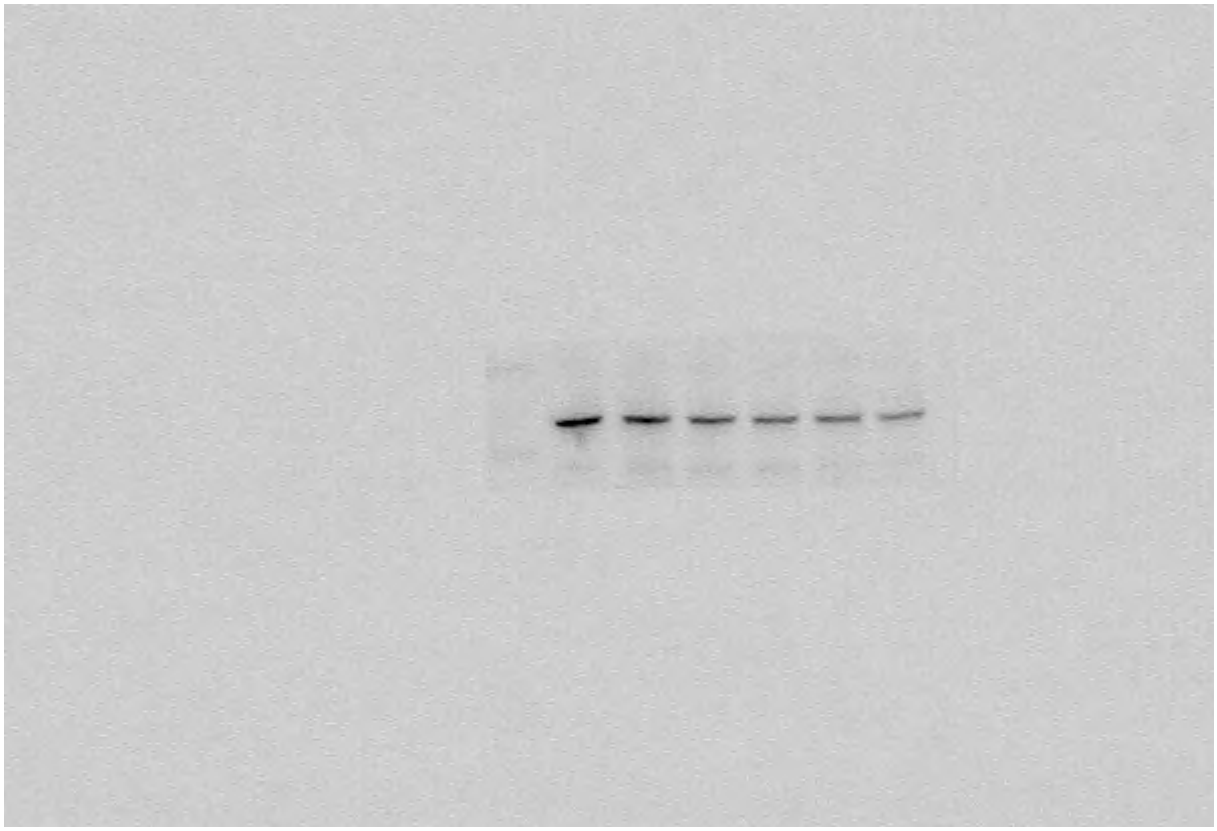


Figure S33 Western blot for phospho-AKT(Ser473) of A704 cell line after BLU9931 treatment.
From left, Control, 1nM, 10nM, 100nM, 1 μM, 10 μM of BLU9931 treatment concentration.

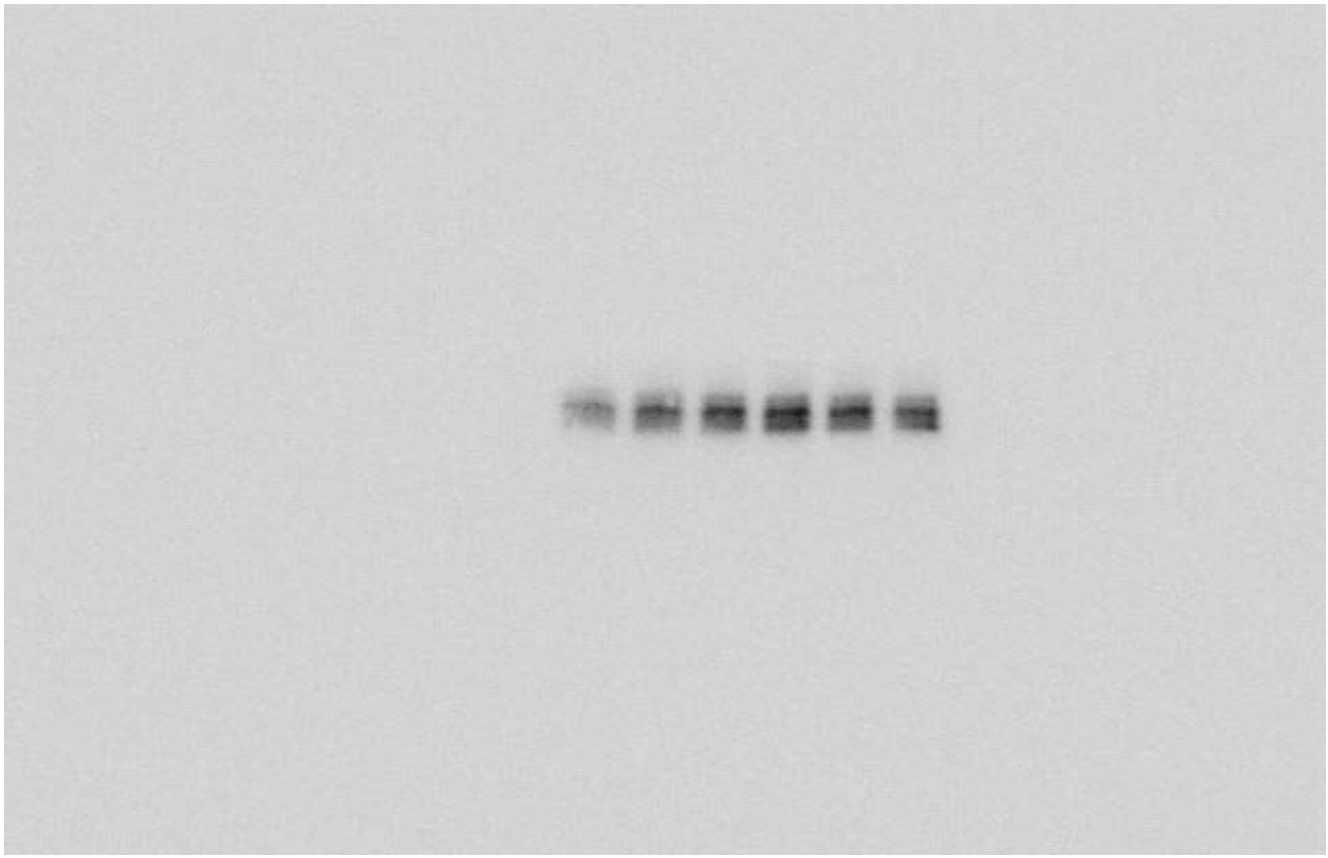


Figure S34 Western blot for 4EBP1 of A704 cell line after BLU9931 treatment.
From left, Control, 1nM, 10nM, 100nM, 1 μM, 10 μM of BLU9931 treatment concentration.

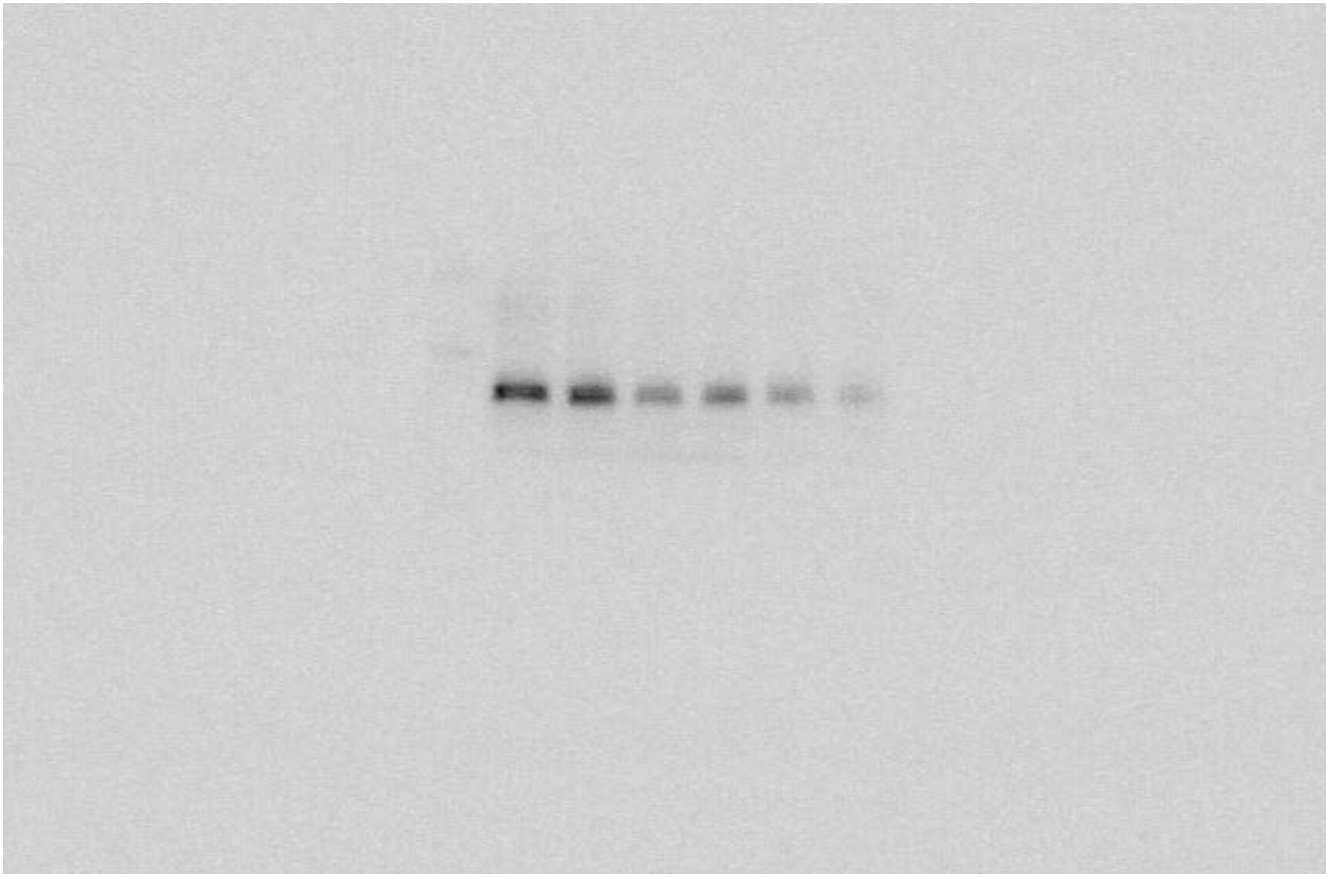


Figure S35 Western blot for phospho-4EBP1(Thr70) of A704 cell line after BLU9931 treatment. From left, Control, 1nM, 10nM, 100nM, 1 μM, 10 μM of BLU9931 treatment concentration.

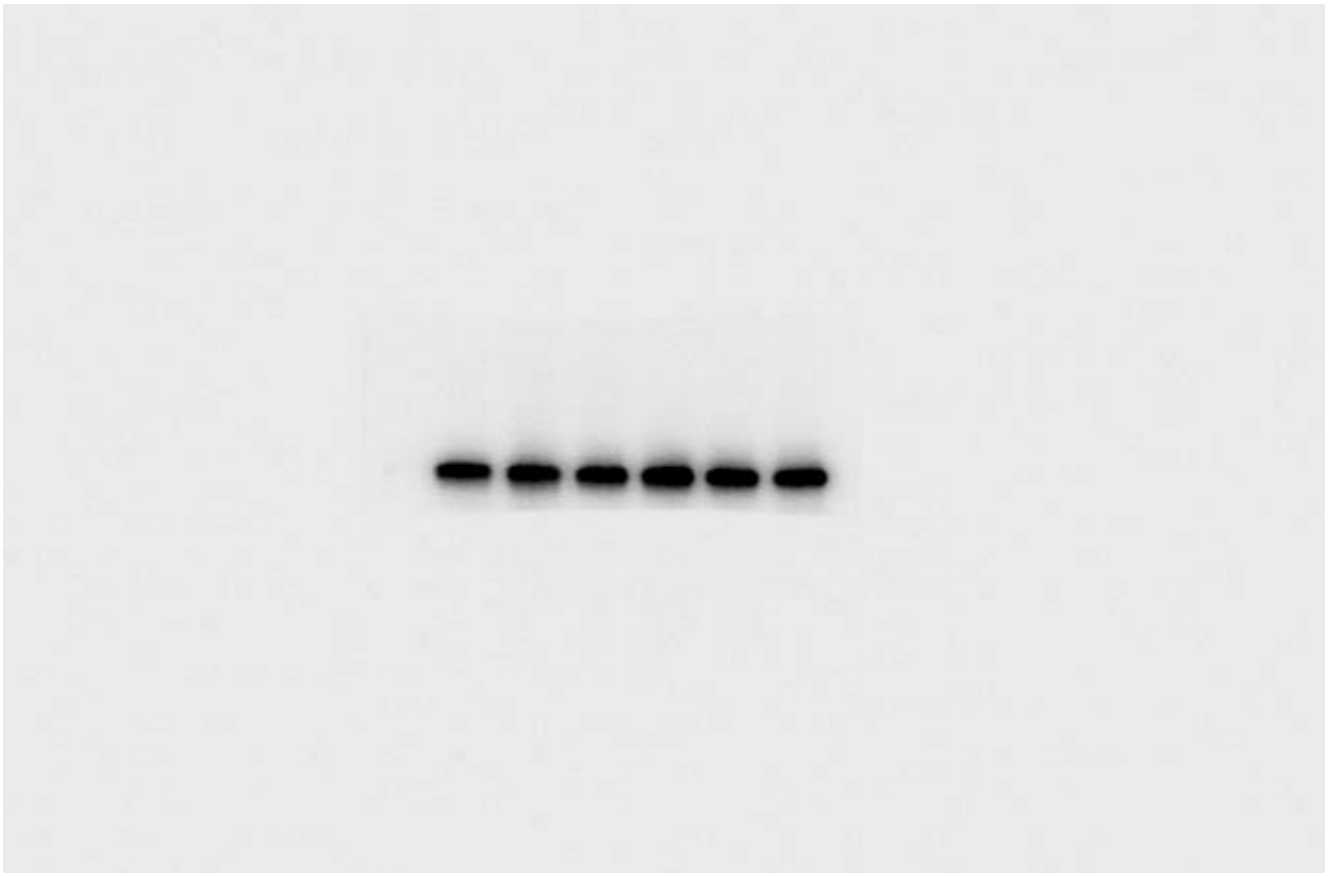


Figure S36 Western blot for S6RP of A704 cell line after BLU9931 treatment.
From left, Control, 1nM, 10nM, 100nM, 1 μM, 10 μM of BLU9931 treatment concentration.

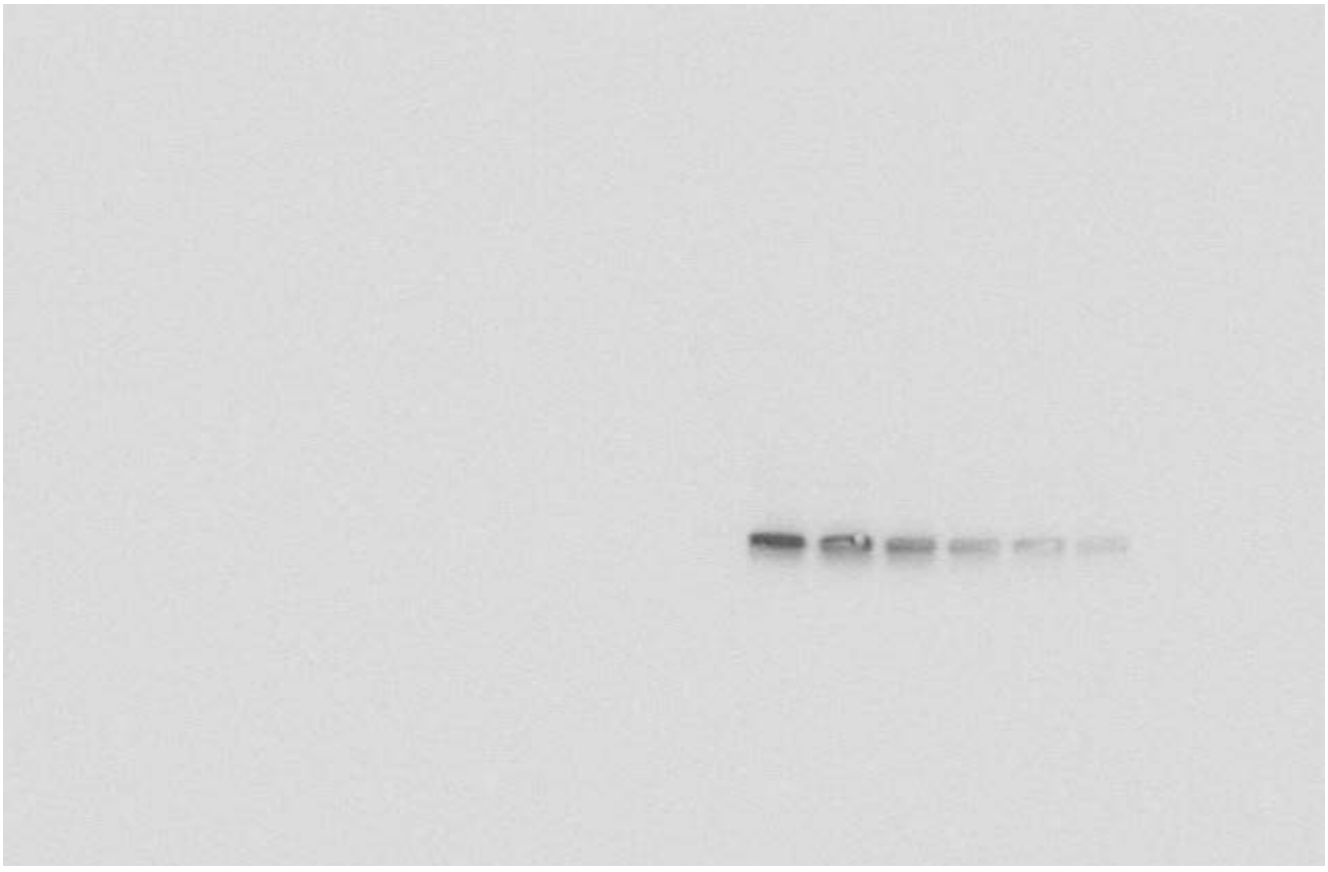


Figure S37 Western blot for phospho-S6RP(Ser235/236) of A704 cell line after BLU9931 treatment.
From left, Control, 1nM, 10nM, 100nM, 1 μM, 10 μM of BLU9931 treatment concentration.

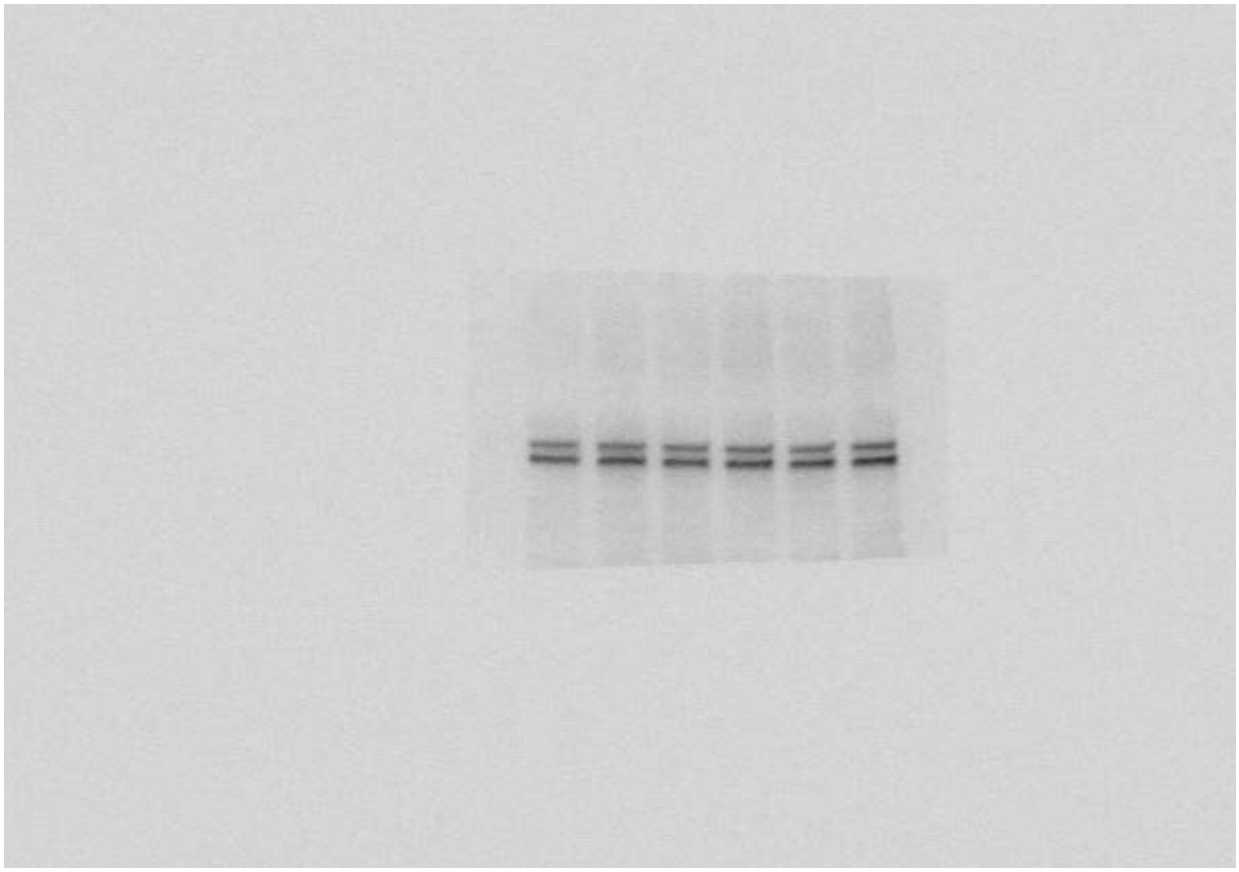


Figure S38 Western blot for ERK1/2 of A704 cell line after BLU9931 treatment.
From left, Control, 1nM, 10nM, 100nM, 1 μM, 10 μM of BLU9931 treatment concentration.

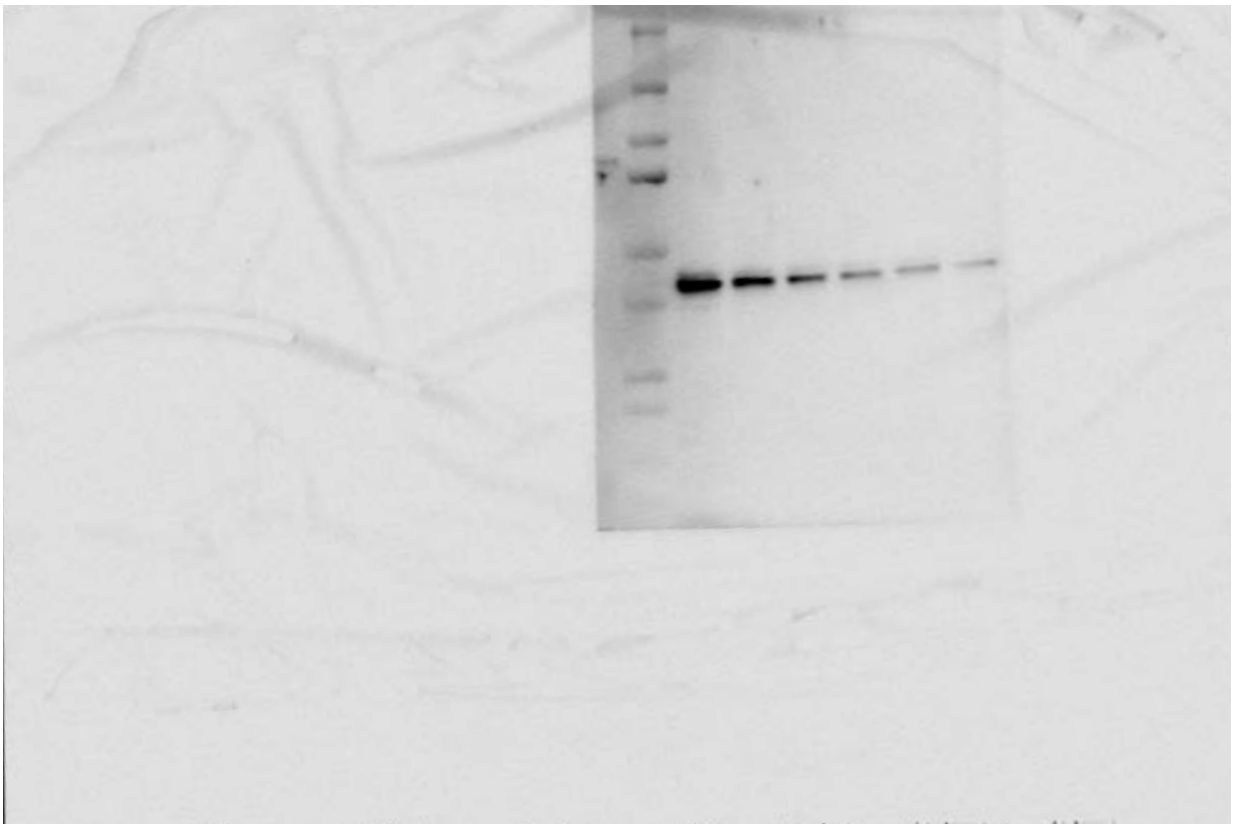


Figure S39 Western blot for phospho-ERK1/2(Thr202/Tyr204) of A704 cell line after BLU9931 treatment.
From left, Control, 1nM, 10nM, 100nM, 1 μM, 10 μM of BLU9931 treatment concentration.

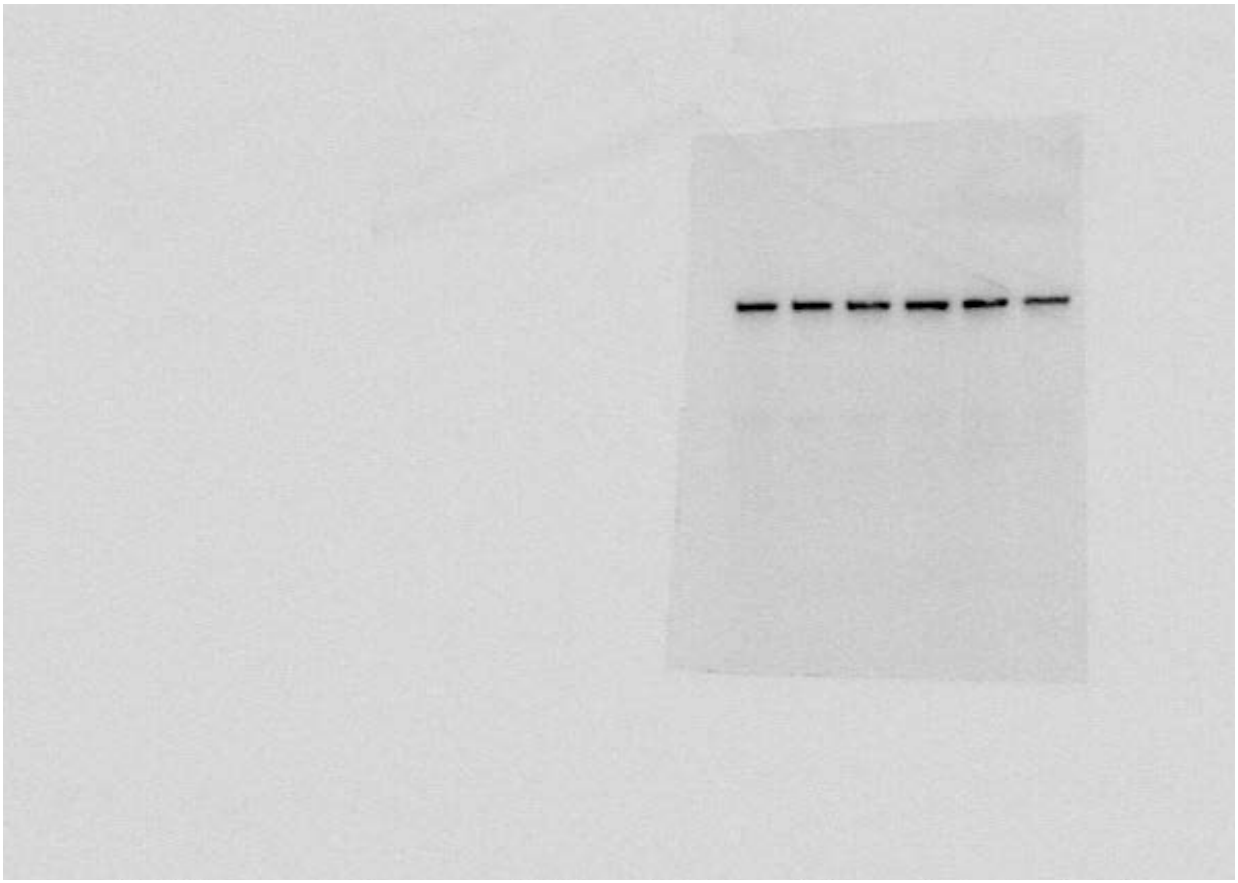


Figure S40 Western blot for STAT3 of A704 cell line after BLU9931 treatment.
From left, Control, 1nM, 10nM, 100nM, 1 μ M, 10 μ M of BLU9931 treatment concentration.

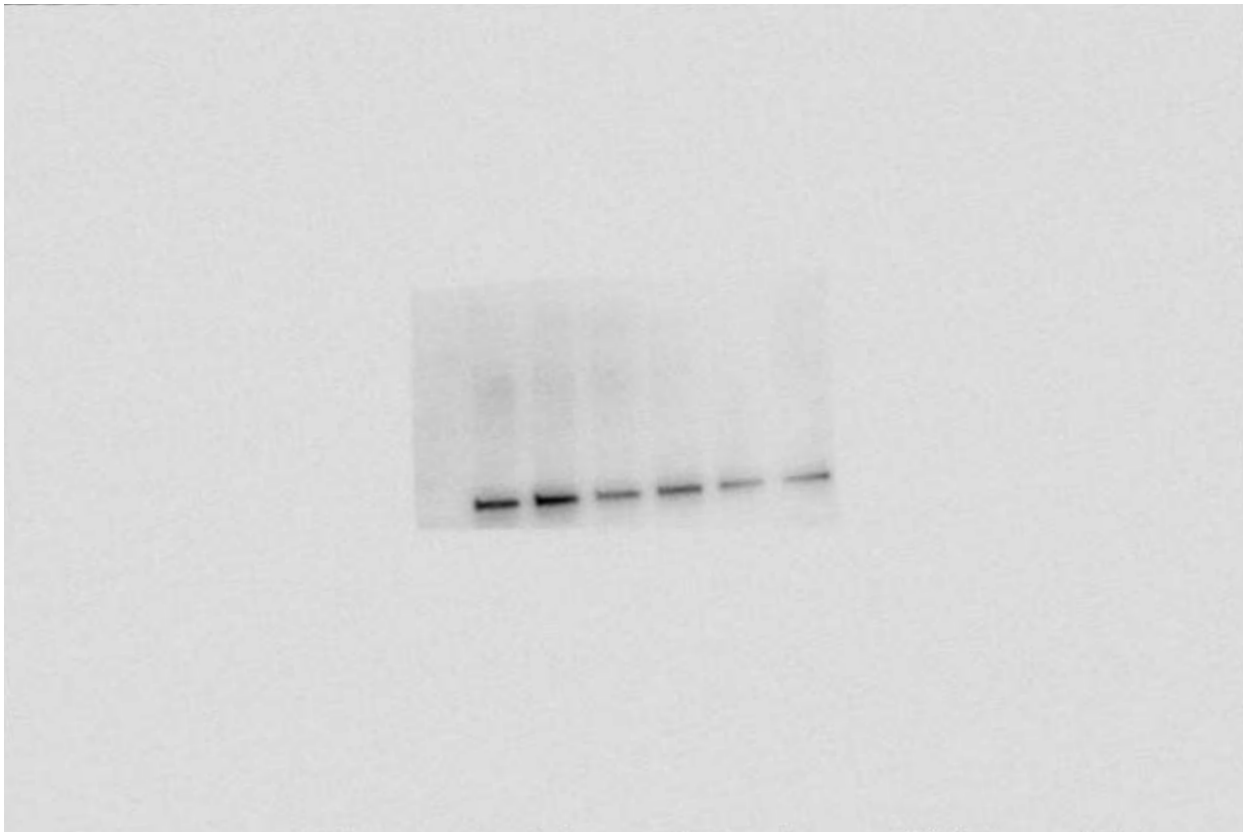


Figure S41 Western blot for phospho-STAT3(Tyr705) of A704 cell line after BLU9931 treatment.
From left, Control, 1nM, 10nM, 100nM, 1 μ M, 10 μ M of BLU9931 treatment concentration.

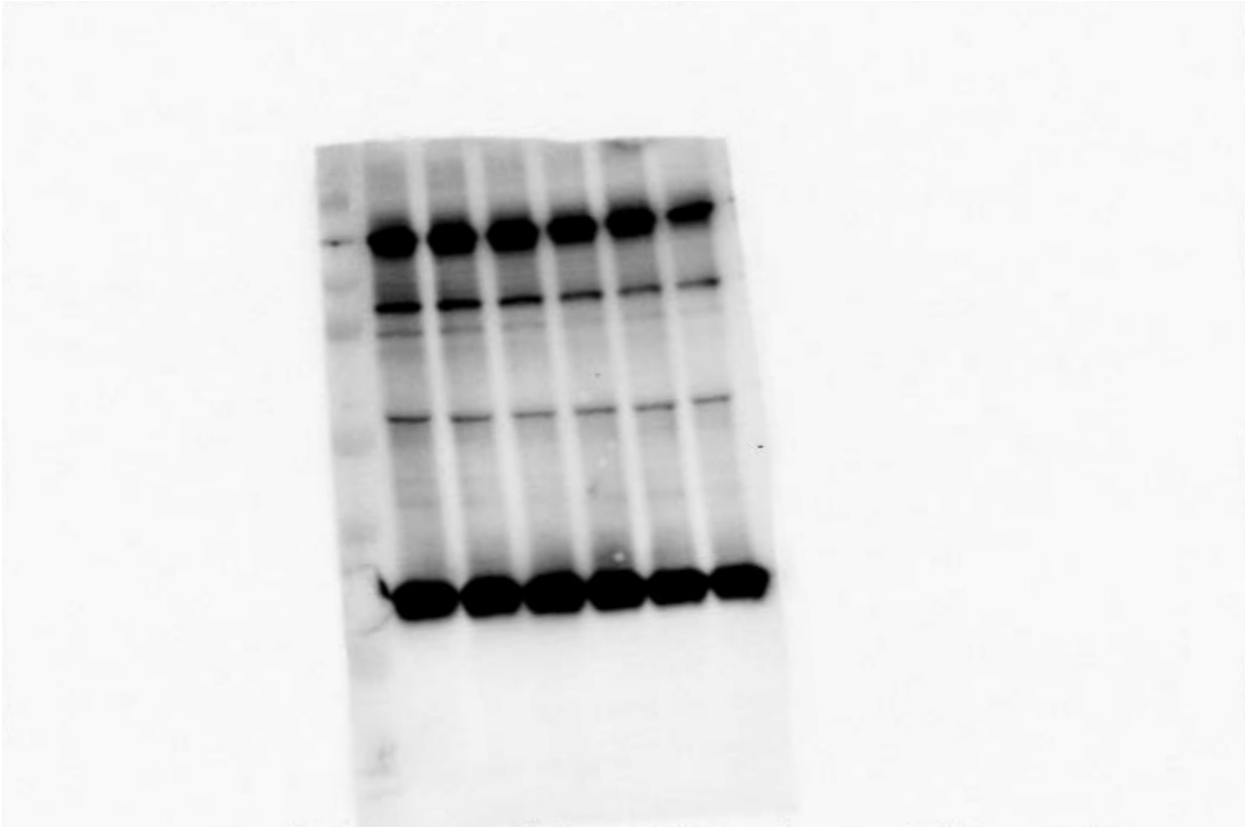


Figure S42 Western blot for phospho-FGFR(Thr653/654) of 769P cell line after BLU9931 treatment. From left, MW marker, Control, 1nM, 10nM, 100nM, 1 μM, 10 μM of BLU9931 treatment concentration.

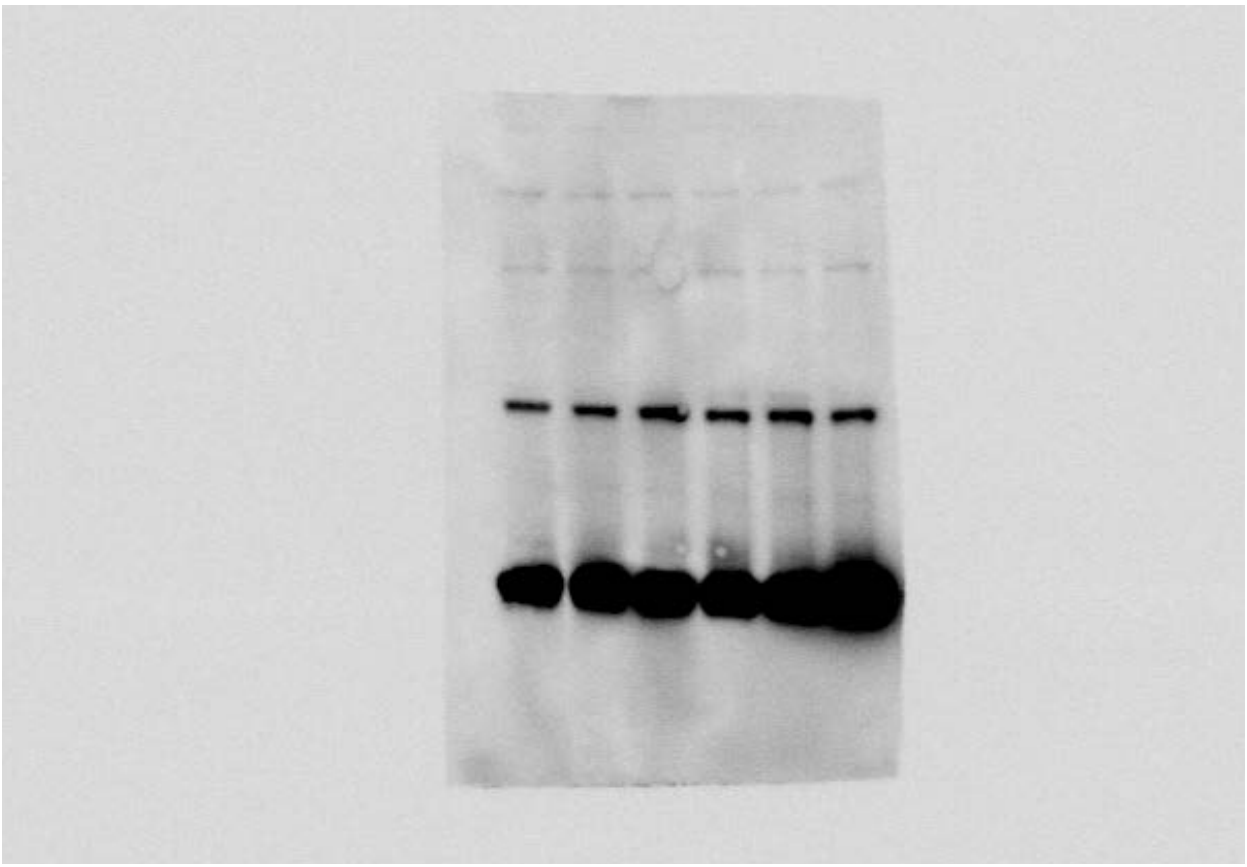


Figure S43 Western blot for α-Tubulin of 769P cell line after BLU9931 treatment. From left, Control, 1nM, 10nM, 100nM, 1 μM, 10 μM of BLU9931 treatment concentration.

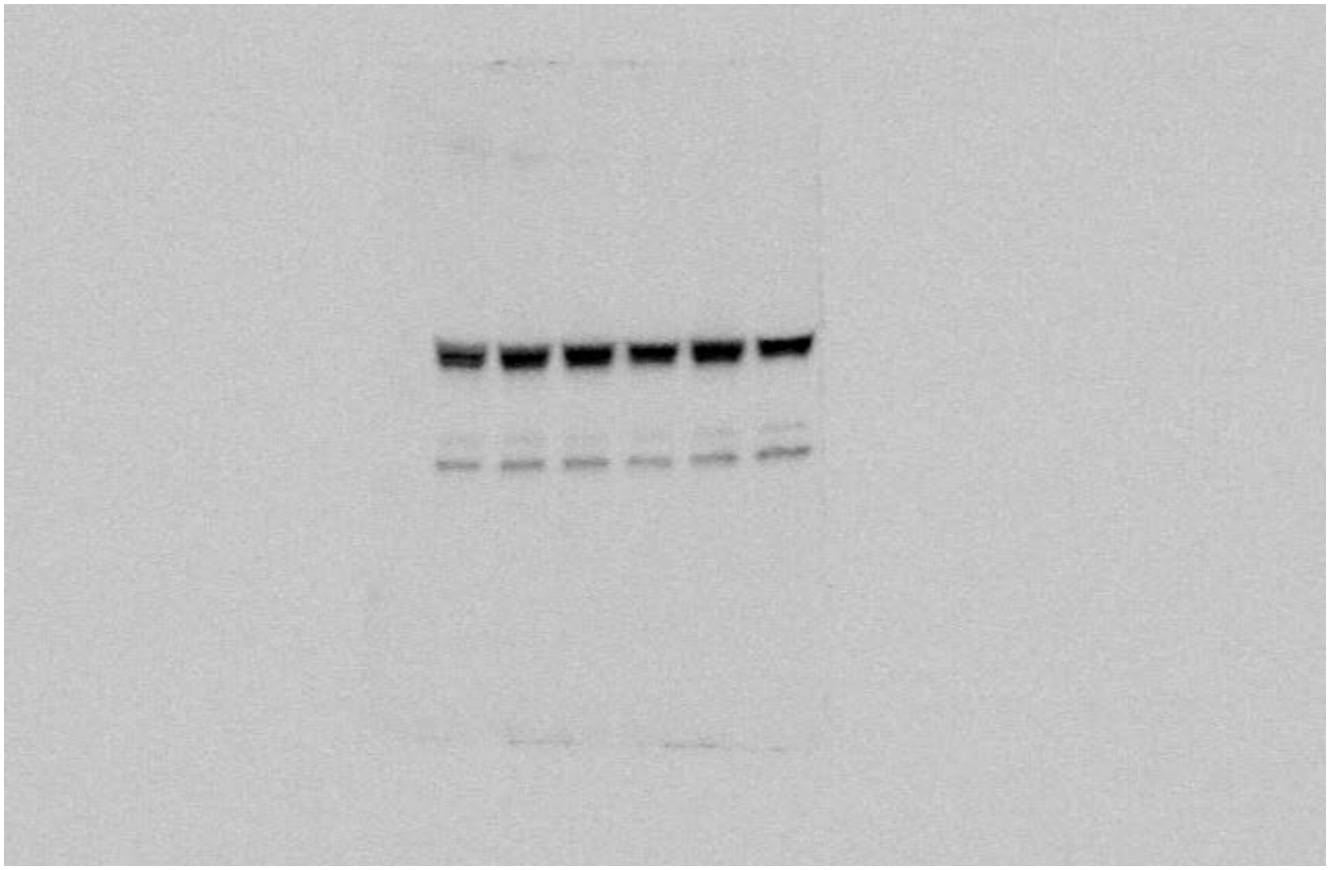


Figure S44 Western blot for AKT of 769P cell line after BLU9931 treatment.
From left, Control, 1nM, 10nM, 100nM, 1 μM, 10 μM of BLU9931 treatment.

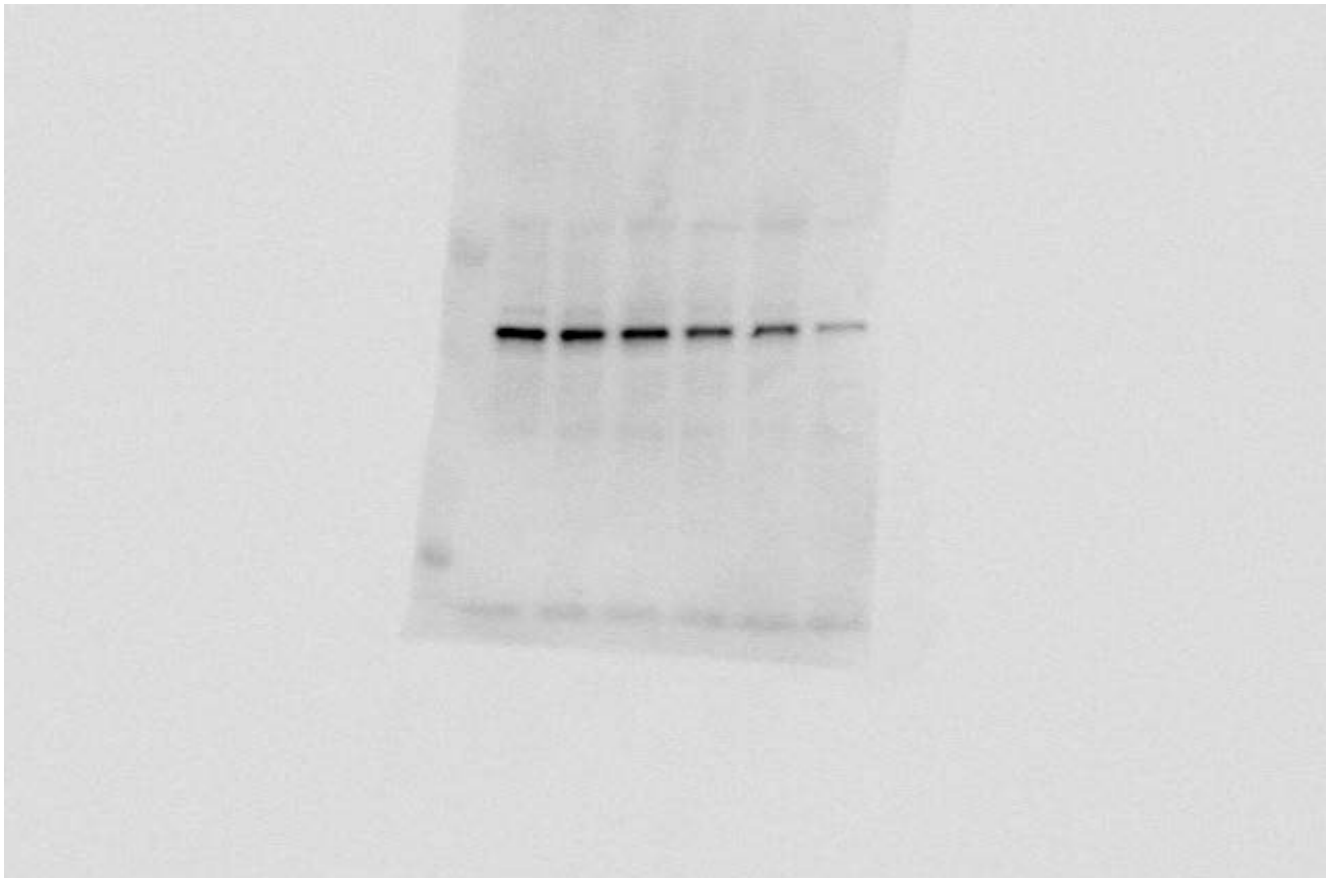


Figure S45 Phospho-AKT(Ser 473) of 769P cell line after BLU9931 treatment.

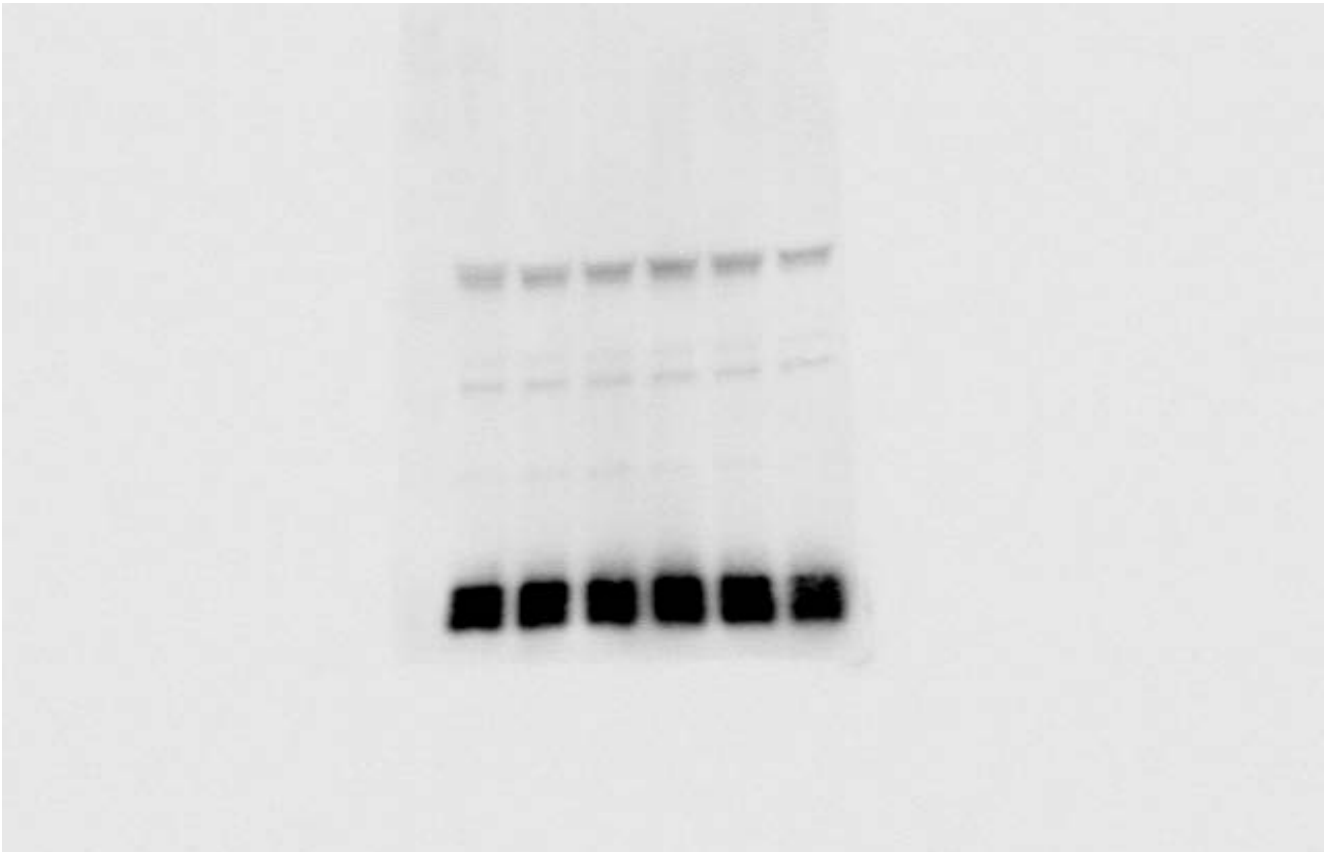


Figure S46 Western blot for 4EBP1 of 769P cell line after BLU9931 treatment.
From left, Control, 1nM, 10nM, 100nM, 1 μM, 10 μM of BLU9931 treatment concentration.

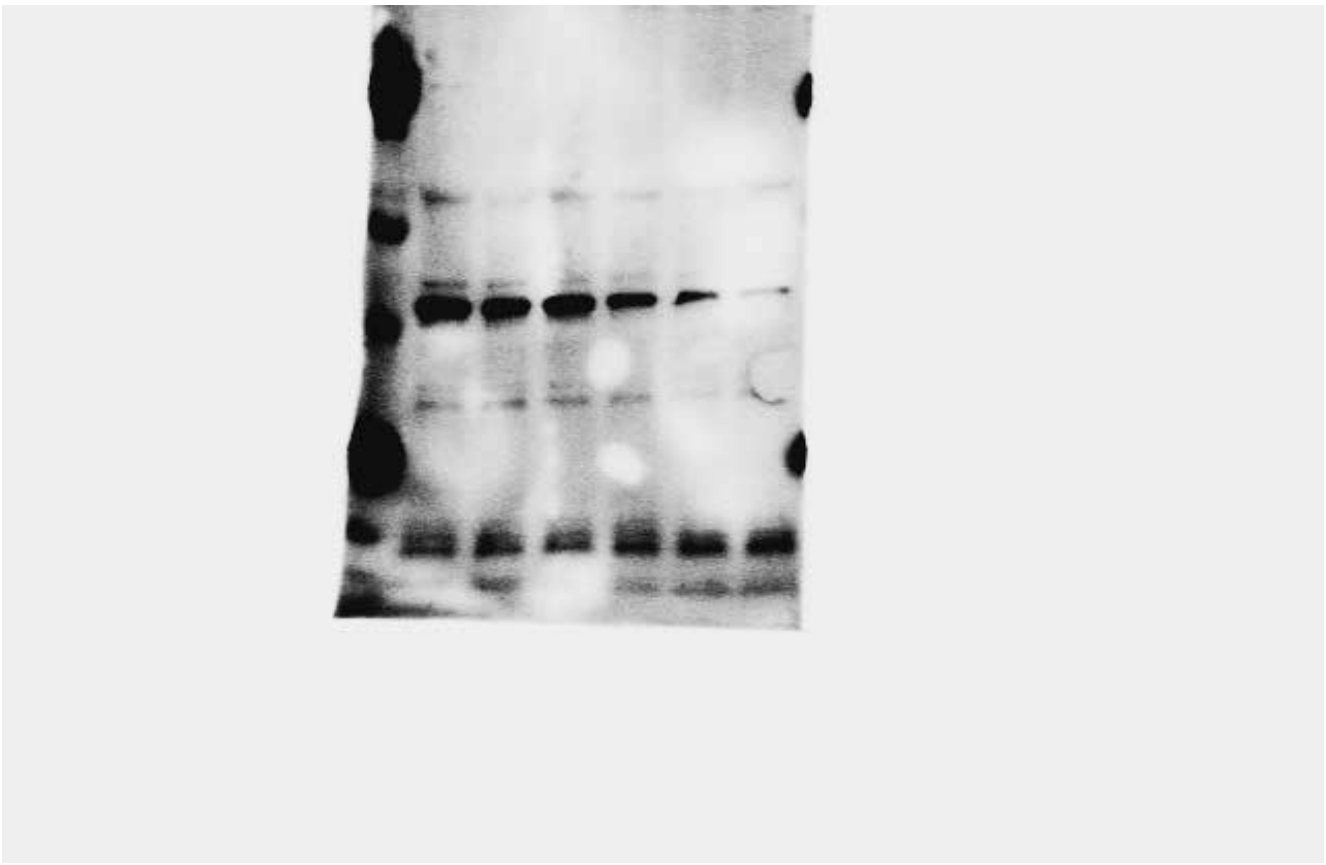


Figure S47 Western blot for phospho-4EBP1(Thr70) of 769P cell line after BLU9931 treatment. From left, Control, 1nM, 10nM, 100nM, 1 μM, 10 μM of BLU9931 treatment concentration.

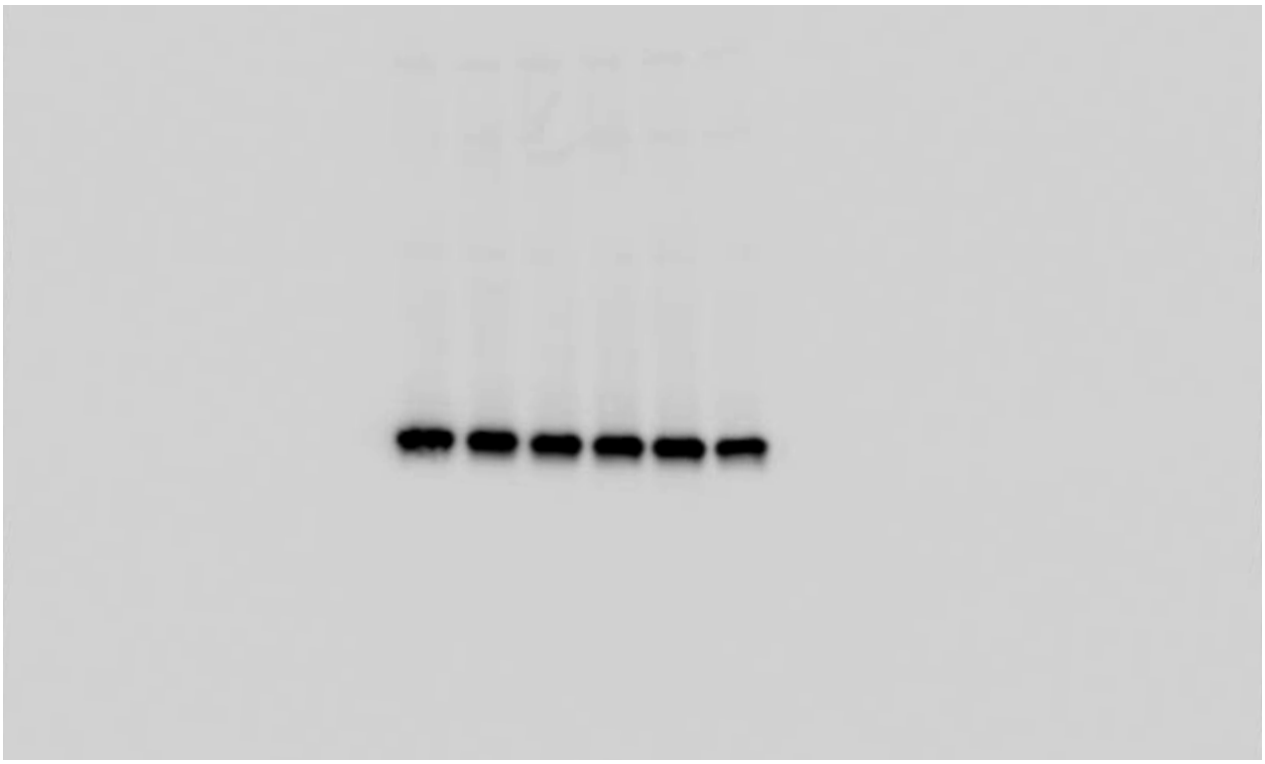


Figure S48 Western blot for S6RP of 769P cell line after BLU9931 treatment.
From left, Control, 1nM, 10nM, 100nM, 1 μM, 10 μM of BLU9931 treatment concentration.

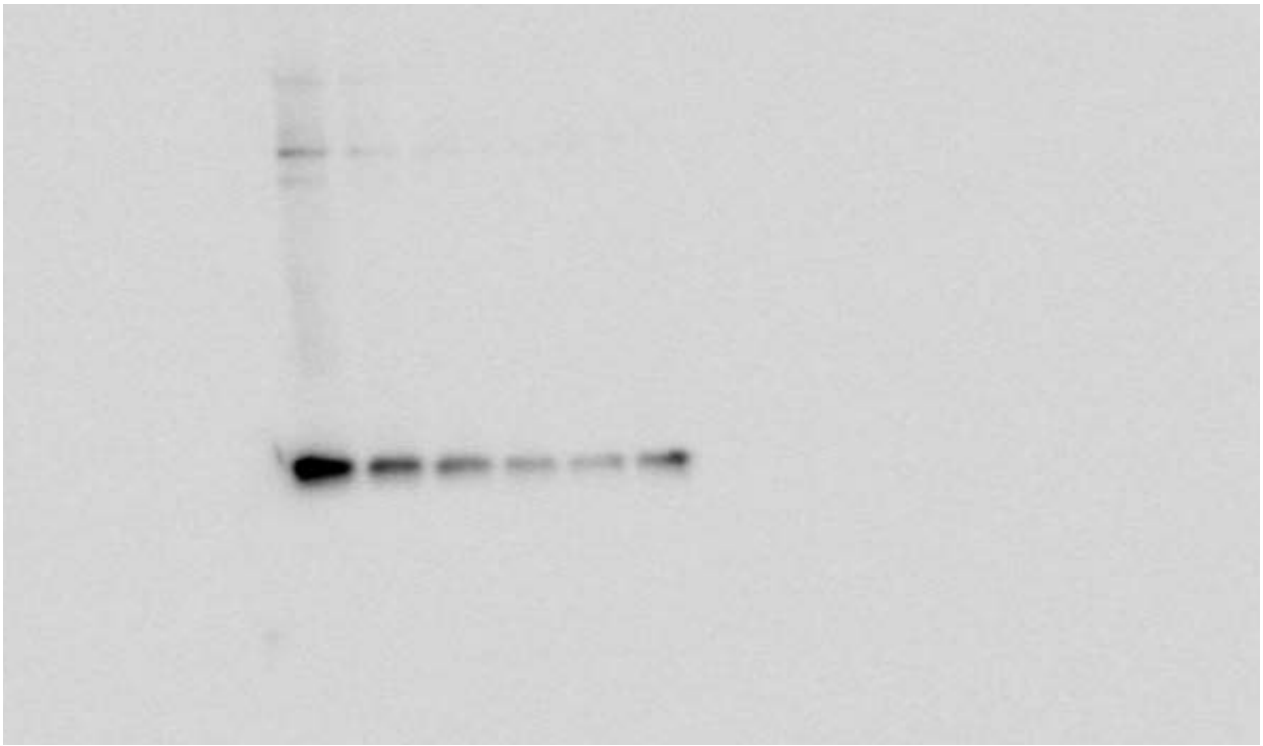


Figure S49 Western blot for phospho-S6RP(Ser235/236) of 769P cell line after BLU9931 treatment.
From left, Control, 1nM, 10nM, 100nM, 1 μM, 10 μM of BLU9931 treatment concentration.

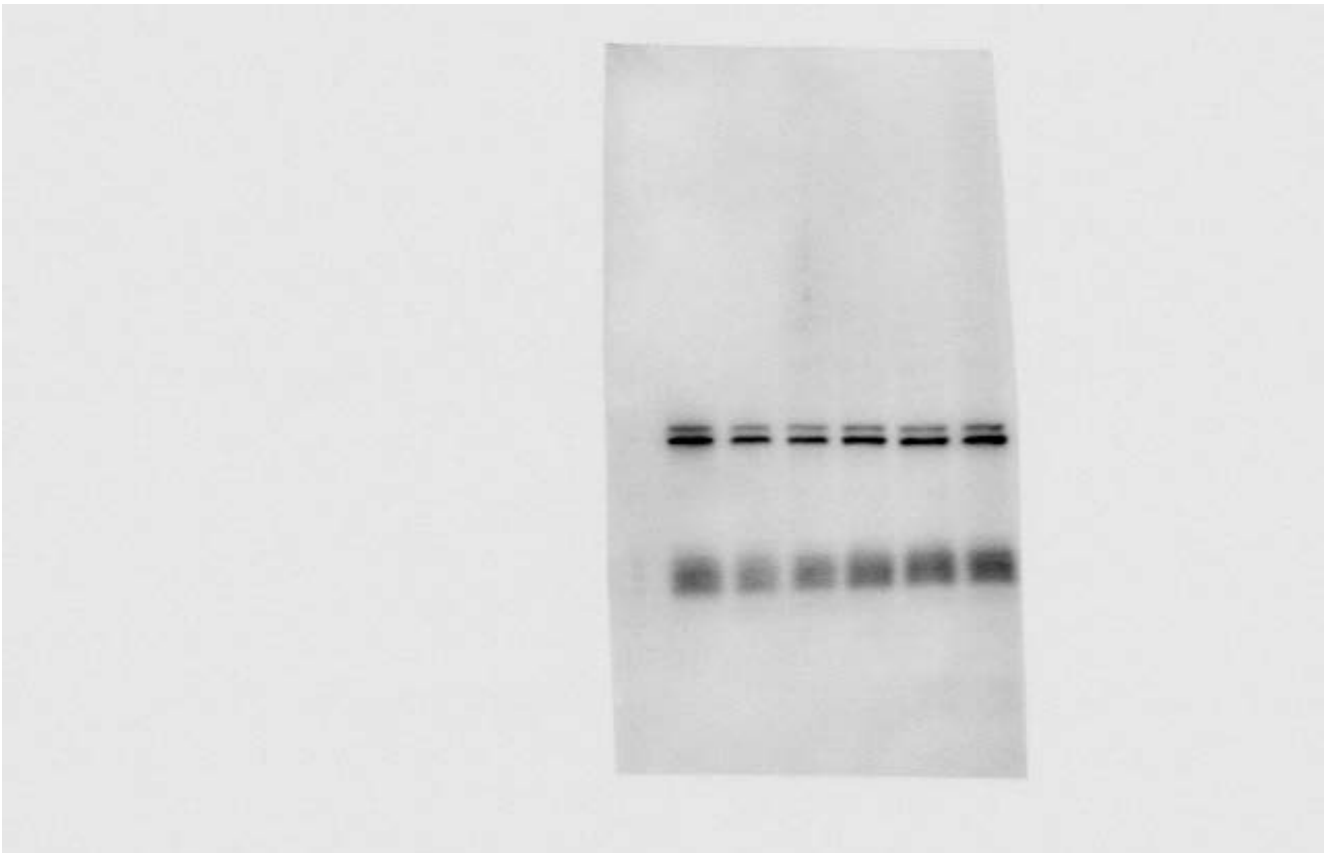


Figure S50 Western blot for ERK1/2 of 769P cell line after BLU9931 treatment.
From left, Control, 1nM, 10nM, 100nM, 1 μM, 10 μM of BLU9931 treatment concentration.

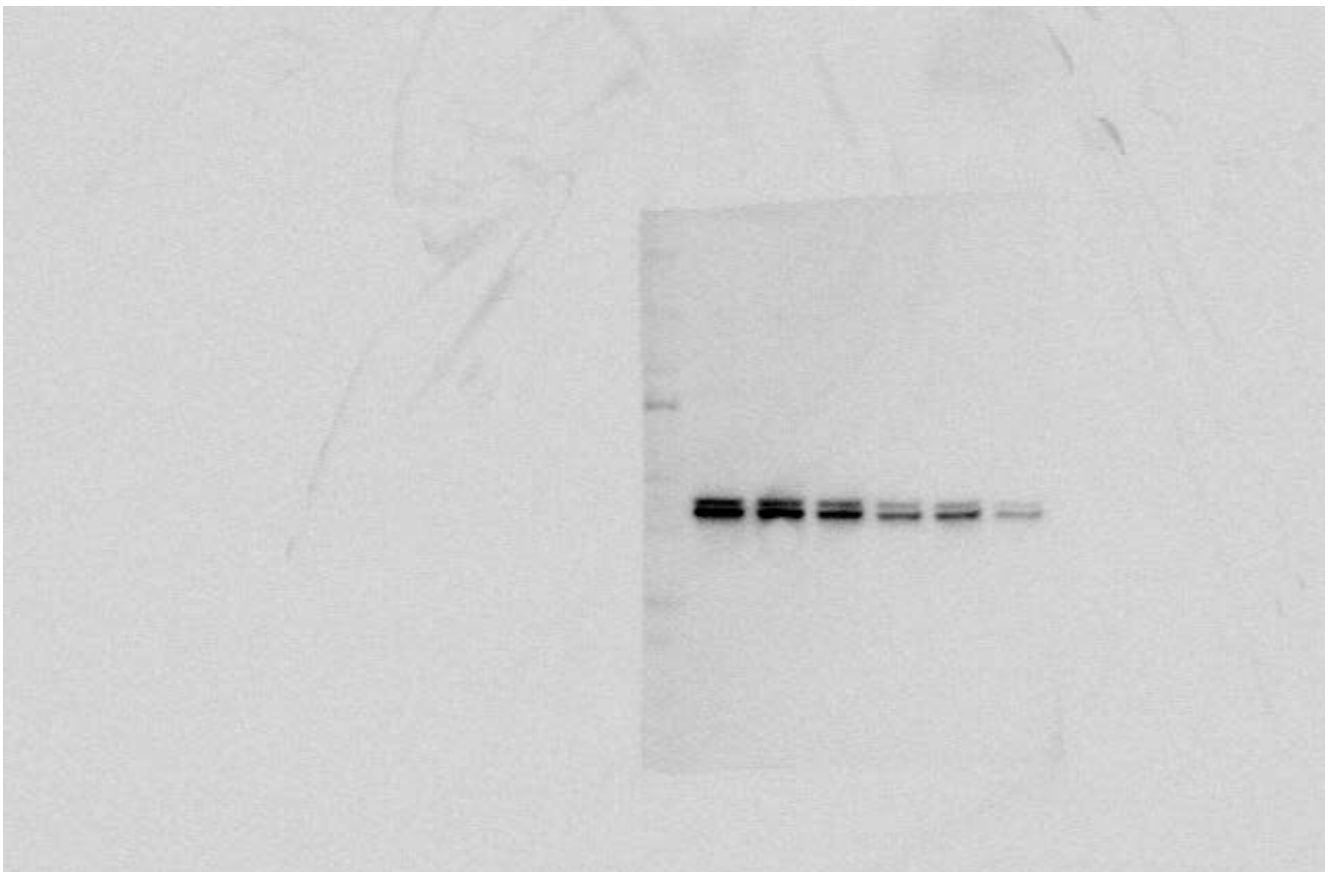


Figure S51 Western blot for phospho-ERK1/2(Thr202/Tyr204) of 769P cell line after BLU9931 treatment.
From left, Control, 1nM, 10nM, 100nM, 1 μM, 10 μM of BLU9931 treatment concentration.

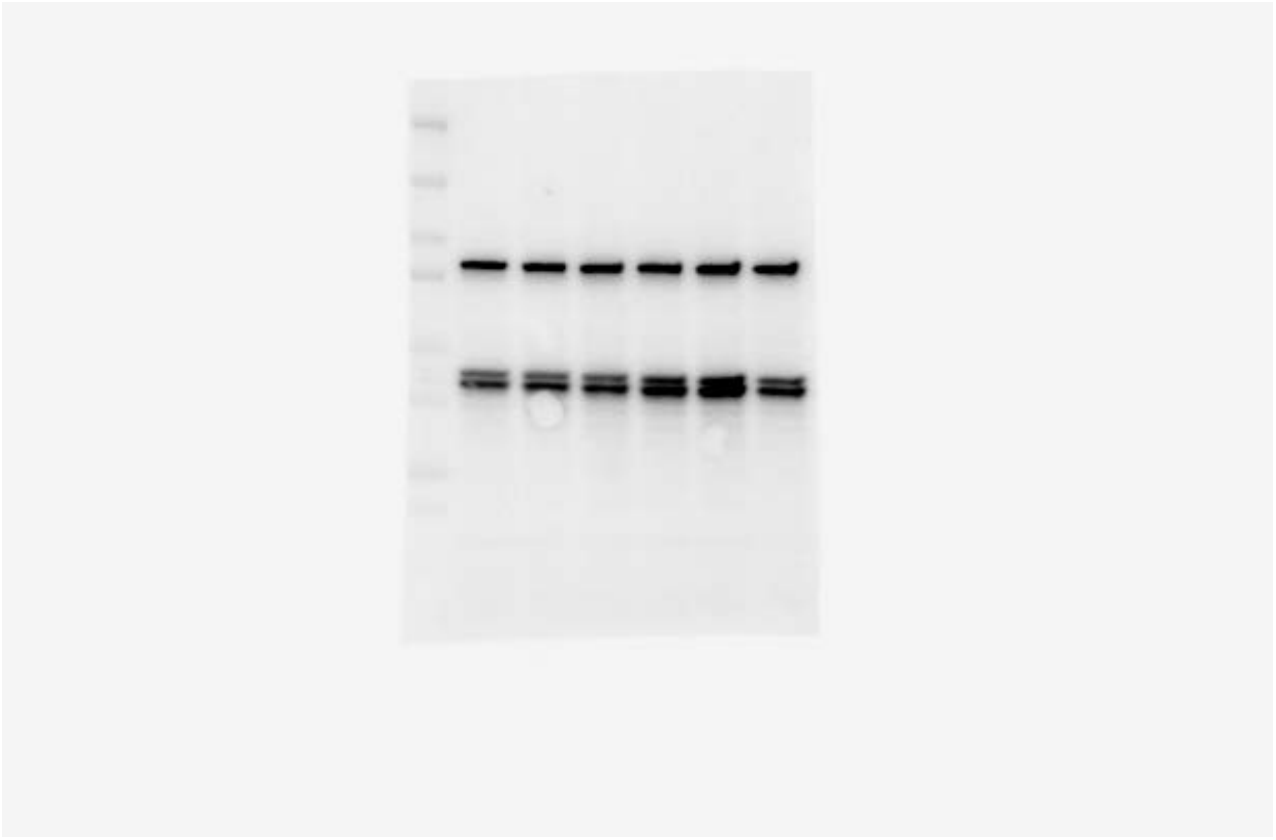


Figure S52 Western blot for STAT3 of A704 cell line after BLU9931 treatment.
From left, Control, 1nM, 10nM, 100nM, 1 μ M, 10 μ M of BLU9931 treatment concentration.

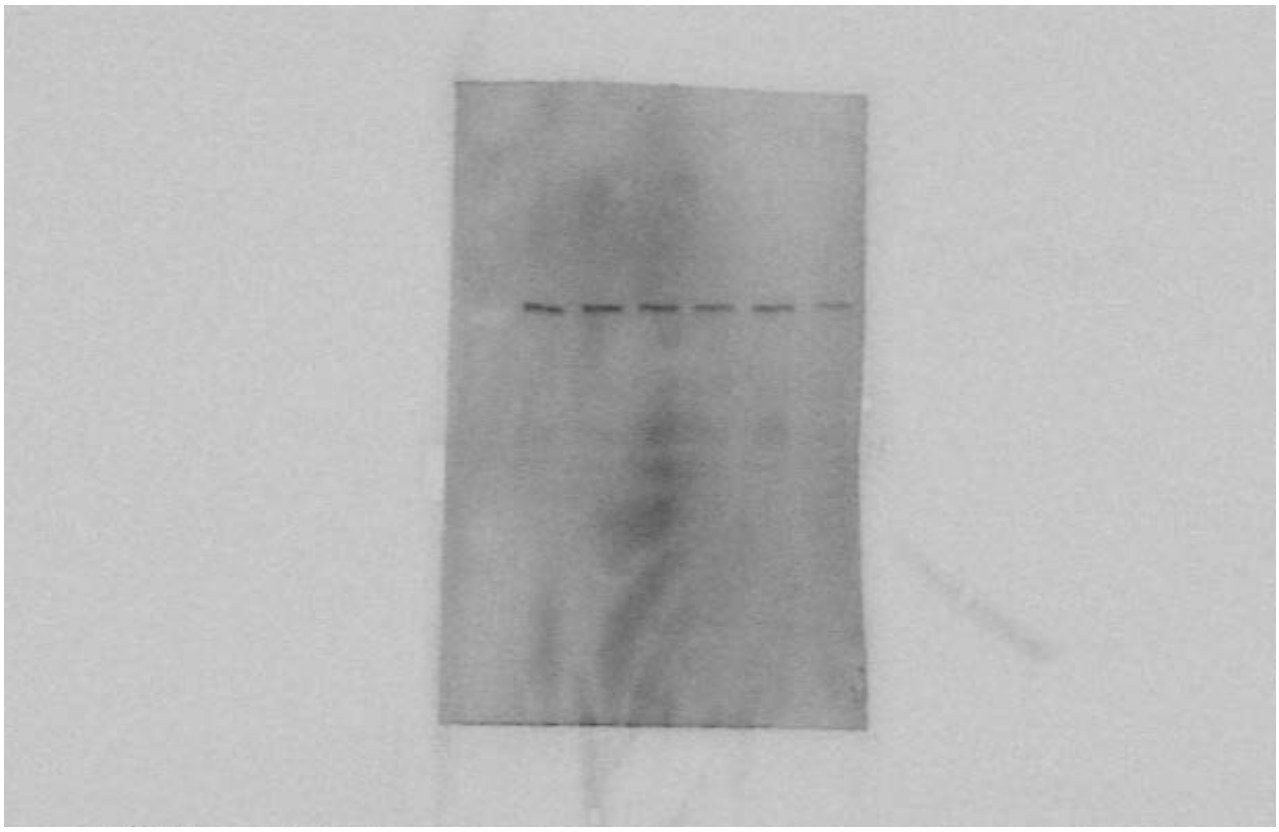


Figure S53 Western blot for phospho-STAT3(Tyr705) of A704 cell line after BLU9931 treatment.
From left, Control, 1nM, 10nM, 100nM, 1 μ M, 10 μ M of BLU9931 treatment concentration.