

Figure S1:
The supplementary
figures for Figure 4
and 6

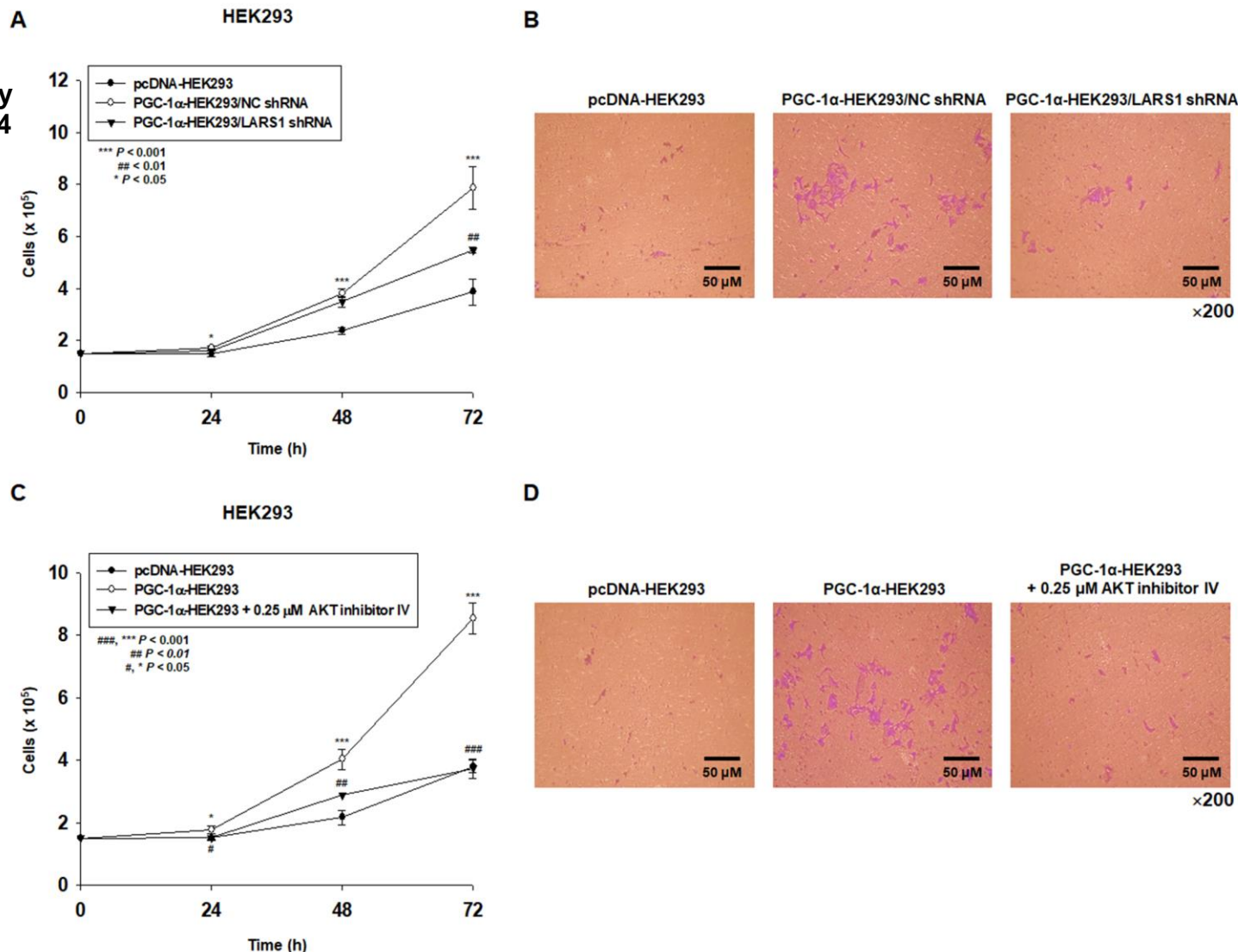


Figure S1. LARS1 knockdown and AKT inhibitor IV reduce cell proliferation and invasion of PGC-1 α -HEK293 cells. (A) pcDNA-HEK293 cells and PGC-1 α -HEK293 cells after transfection with NC shRNA or LARS1 shRNA were seeded and cultured for the indicated time and cell proliferation was determined by cell counting. Data are presented as the mean \pm SD of three separate experiments. * $p < 0.05$, *** $p < 0.001$, vs. pcDNA-HEK293 cells. (B) Transwell invasion assays were performed using pcDNA-HEK293, PGC-1 α -HEK293/NC shRNA, and PGC-1 α -HEK293/LARS1 shRNA cells. Representative figures of pcDNA-HEK293, PGC-1 α -HEK293/NC shRNA, and PGC-1 α -HEK293/LARS1 shRNA cells in the transwell invasion assay are shown ($\times 200$ magnification). (C) PGC-1 α -HEK293 cells were treated with/without 0.25 μ M AKT inhibitor IV for indicated time and cell proliferation was determined by cell counting. Data are presented as the mean \pm SD of three separate experiments. * $p < 0.05$, *** $p < 0.001$, vs. pcDNA-HEK293 cells. # $p < 0.05$, ## $p < 0.01$, ### $p < 0.001$, vs. PGC-1 α -HEK293 cells (D) Transwell invasion assays were performed using pcDNA-HEK293, PGC-1 α -HEK293, and PGC-1 α -HEK293 cells treated with 0.25 μ M AKT inhibitor IV. Representative figures of pcDNA-HEK293, PGC-1 α -HEK293, and PGC-1 α -HEK293 treated with AKT inhibitor IV in the transwell invasion assay are shown ($\times 200$ magnification).

Figure S2:
The supplementary figures
for Figure 5

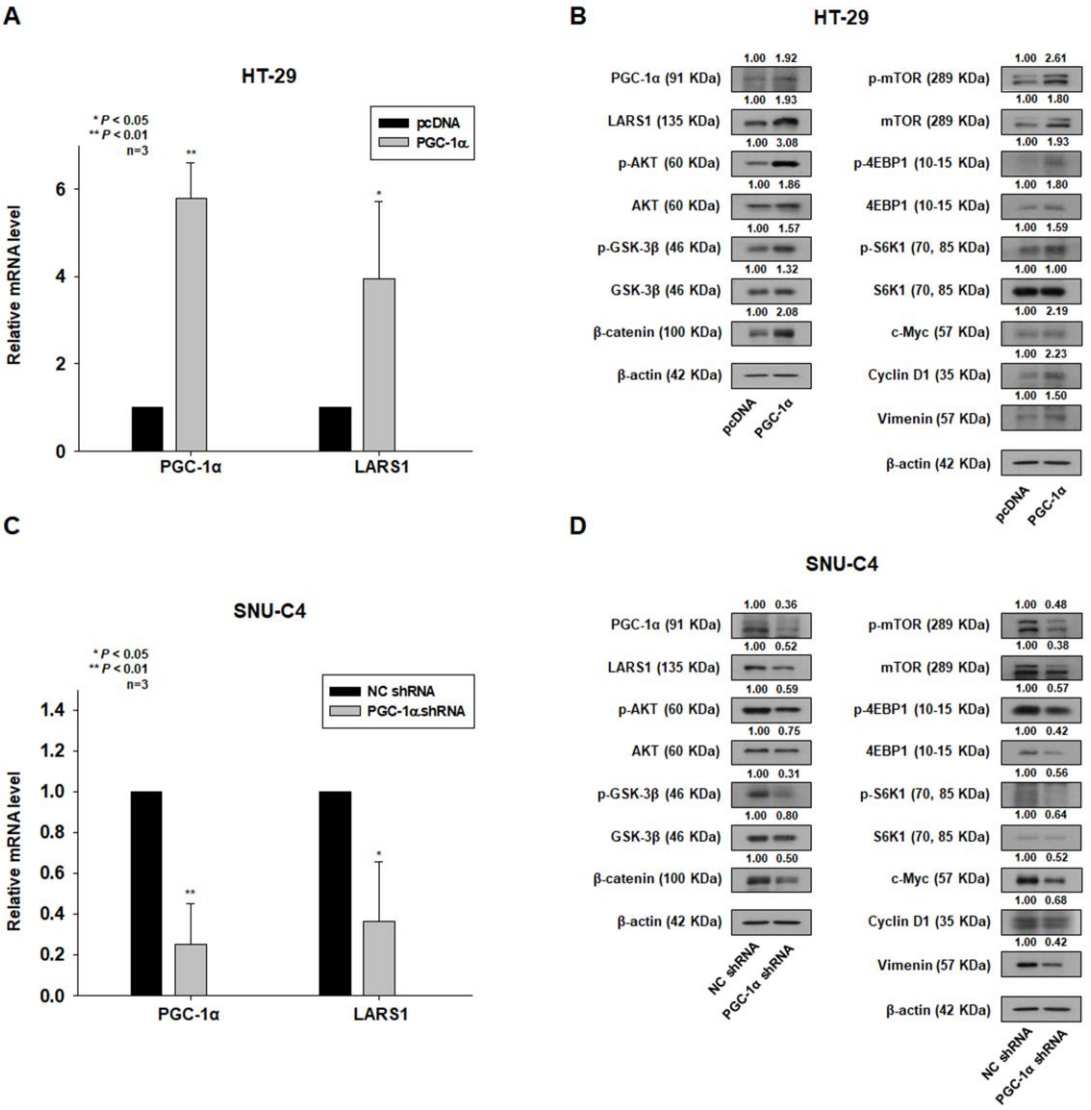
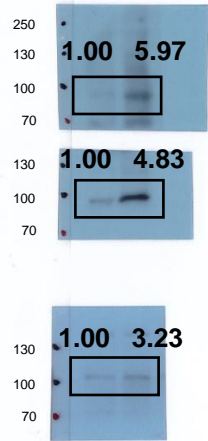


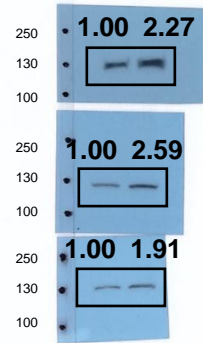
Figure S2. PGC-1 α regulates the expression levels of LARS1, p-AKT, p-GSK-3 β , β -catenin, p-mTOR, p-S6K1, p-4EBP, c-Myc, cyclin D1, and vimentin in human colorectal cancer HT-29 and SNU-C4 cells. (A and B) HT-29 cells were transfected with pcDNA or PGC-1 α expression vector for 48 h. (A) qRT-PCR of cDNA from pcDNA- or PGC-1 α expression vector-transfected HT-29 cells. Relative mRNA expression levels of PGC-1 α and LARS1 are shown. β -actin is used as an endogenous control. Data are shown as mean \pm SD (n=3). * p <0.05, ** p <0.01, vs. pcDNA-HT-29 cells. (B) Representative expression levels of PGC-1 α , LARS1, p-AKT, AKT, p-GSK-3 β , β -catenin, p-mTOR, p-S6K1, p-4EBP, c-Myc, cyclin D1, and vimentin in HT-29 cells by transfection with pcDNA or PGC-1 α expression vectors are shown. β -actin was used as a loading control. Densitometry results are expressed above bands. (C and D) SNU-C4 cells were transfected with NC shRNA or PGC-1 α shRNA expression vector for 48 h. (C) qRT-PCR of cDNA from NC shRNA- or PGC-1 α shRNA expression vector-transfected SNU-C4 cells. Relative mRNA expression levels of PGC-1 α and LARS1 are shown. β -actin is used as an endogenous control. Data are shown as mean \pm SD (n=3). * p <0.05, ** p <0.01, vs. NC shRNA-SNU-C4 cells. (D) Representative expression levels of PGC-1 α , LARS1, p-AKT, AKT, p-GSK-3 β , β -catenin, p-mTOR, p-S6K1, p-4EBP, c-Myc, cyclin D1, and vimentin in SNU-C4 cells by transfection with NC shRNA or PGC-1 α shRNA expression vectors are shown. β -actin was used as a loading control. Densitometry results are expressed above bands. Molecular weights for proteins are indicated in the full, uncropped, annotated western blot images (Figure S11, S12).

Figure S3. Uncropped Western blot for Figure 1B.

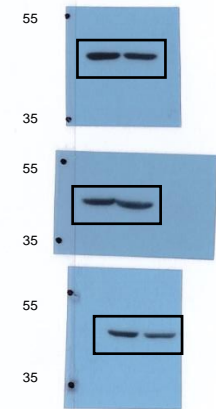
PGC-1 α (91 KDa)



LARS1 (135 KDa)



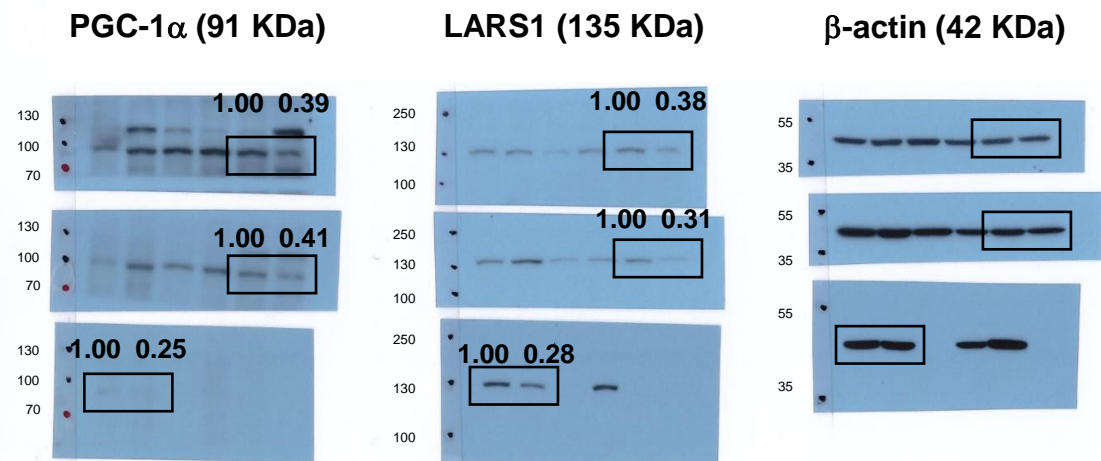
β -actin (42 KDa)



Sample order
1. pcDNA-HEK293
2. PGC-1 α -HEK293

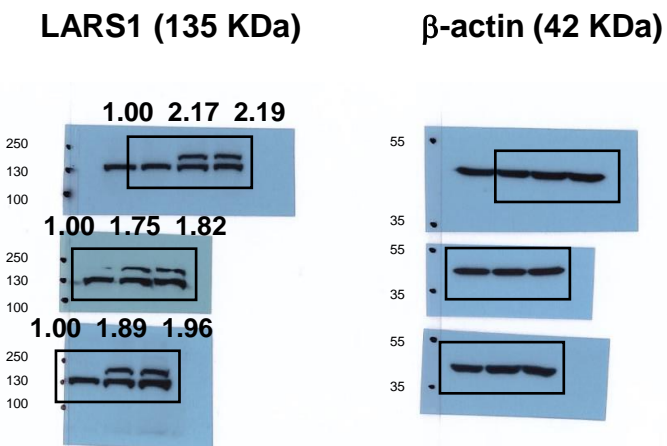
Figure S4. Uncropped Western blot for Figure 2A.

Left panel



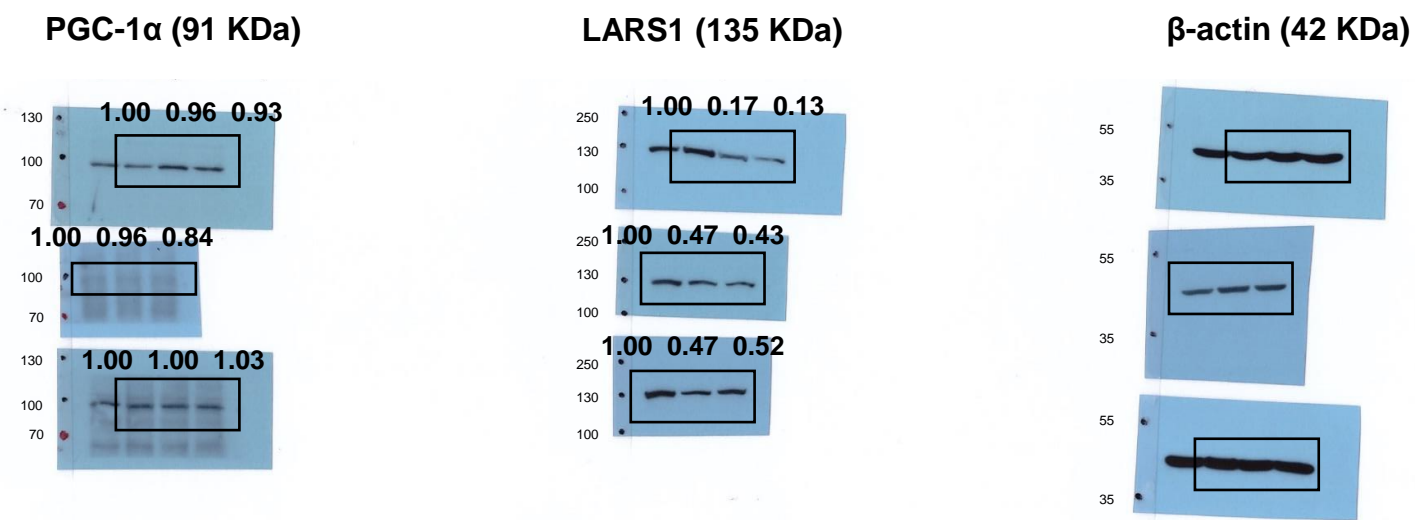
Sample order
1. SW620
2. SW480

Right panel



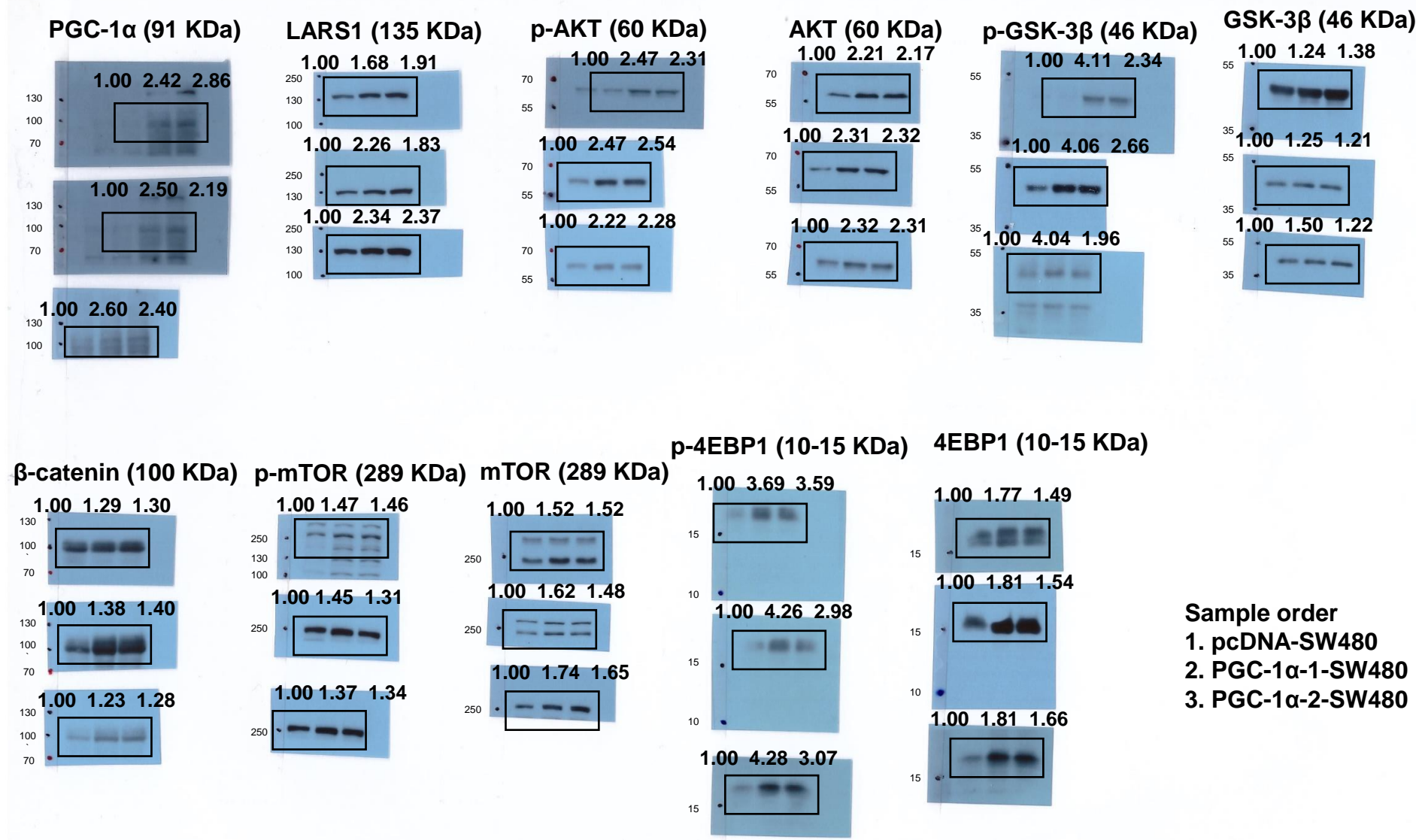
Sample order
1. pCMV6-SW480
2. LARS1-2-SW480
3. LARS1-4-SW480

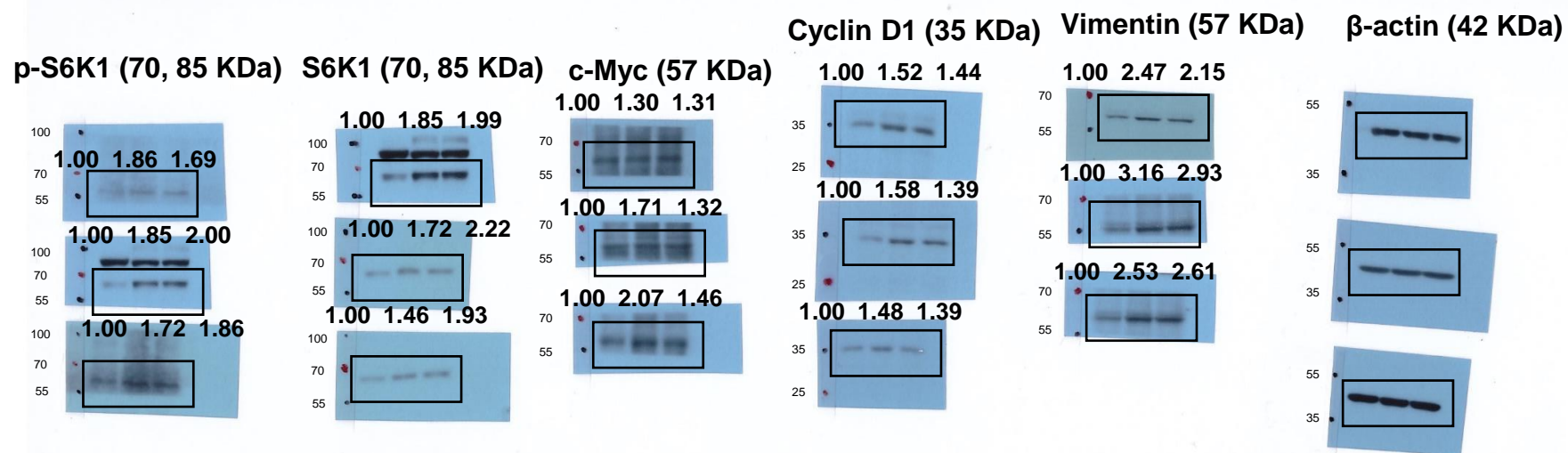
Figure S5. Uncropped Western blot for Figure 3A.



Sample order
1. NC shRNA-SW620
2. LARS1 shRNA-4-SW620
3. LARS1 shRNA-5-SW620

Figure S6. Uncropped Western blot for Figure 5A.

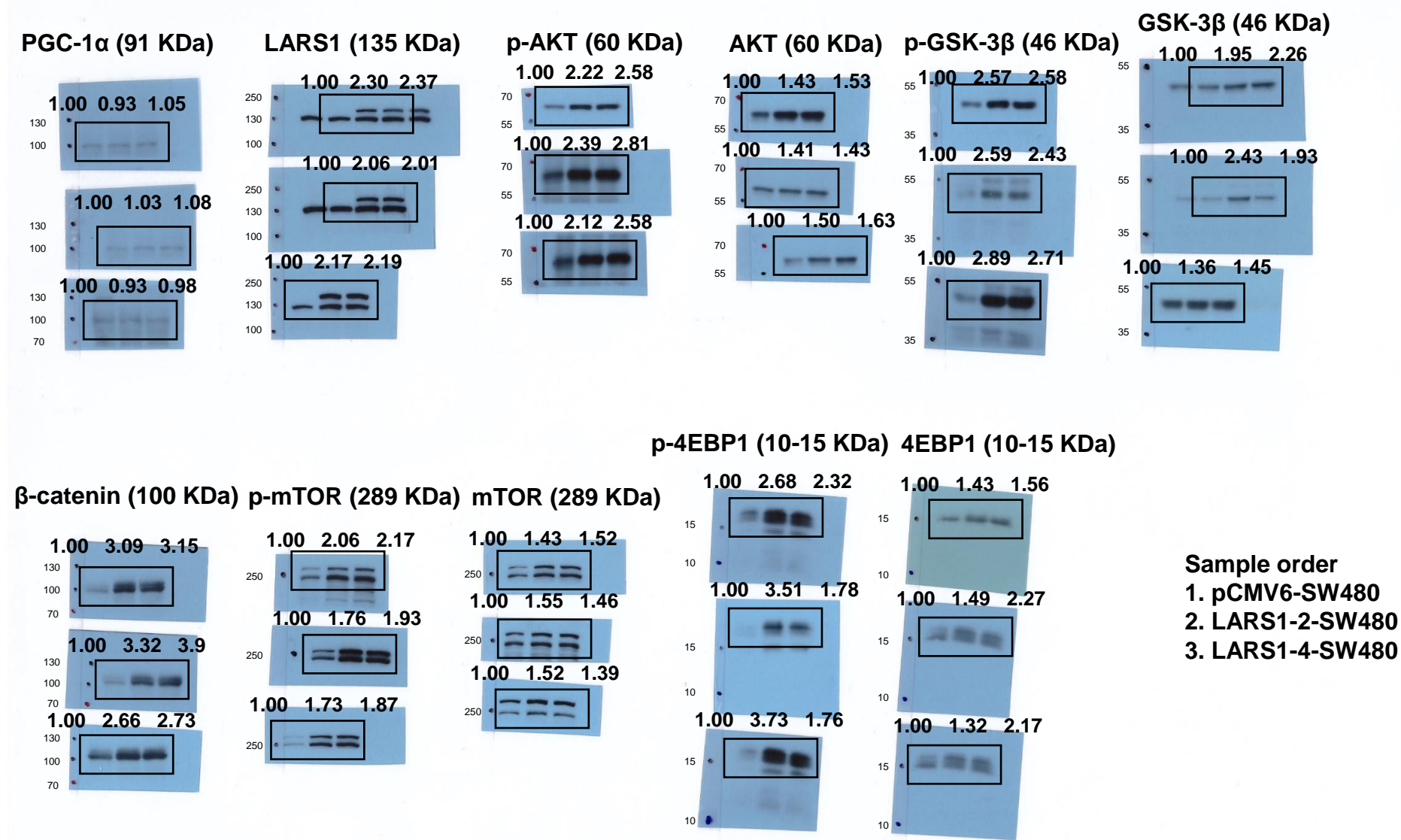




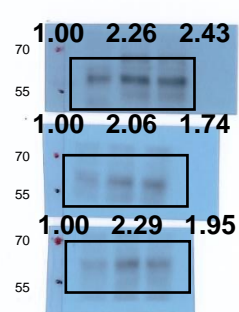
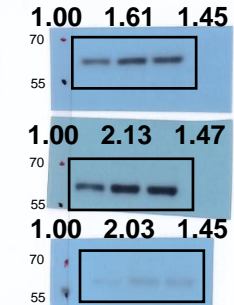
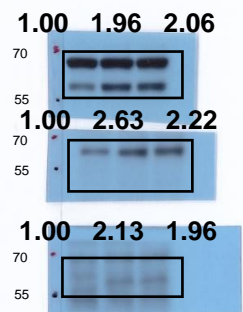
Sample order

- 1. pcDNA-SW480**
- 2. PGC-1α-1-SW480**
- 3. PGC-1α-2-SW480**

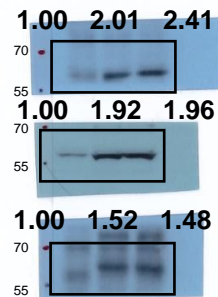
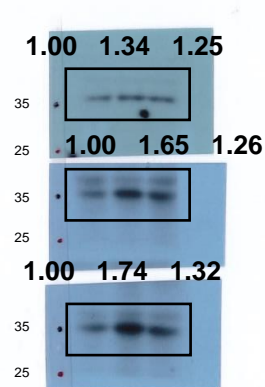
Figure S7. Uncropped Western blot for Figure 5B.



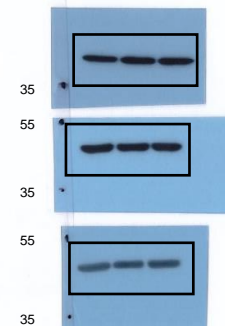
p-S6K1 (70, 85 KDa) S6K1 (70, 85 KDa) c-Myc (57 KDa)



Cyclin D1 (35 KDa) Vimentin (57 KDa)



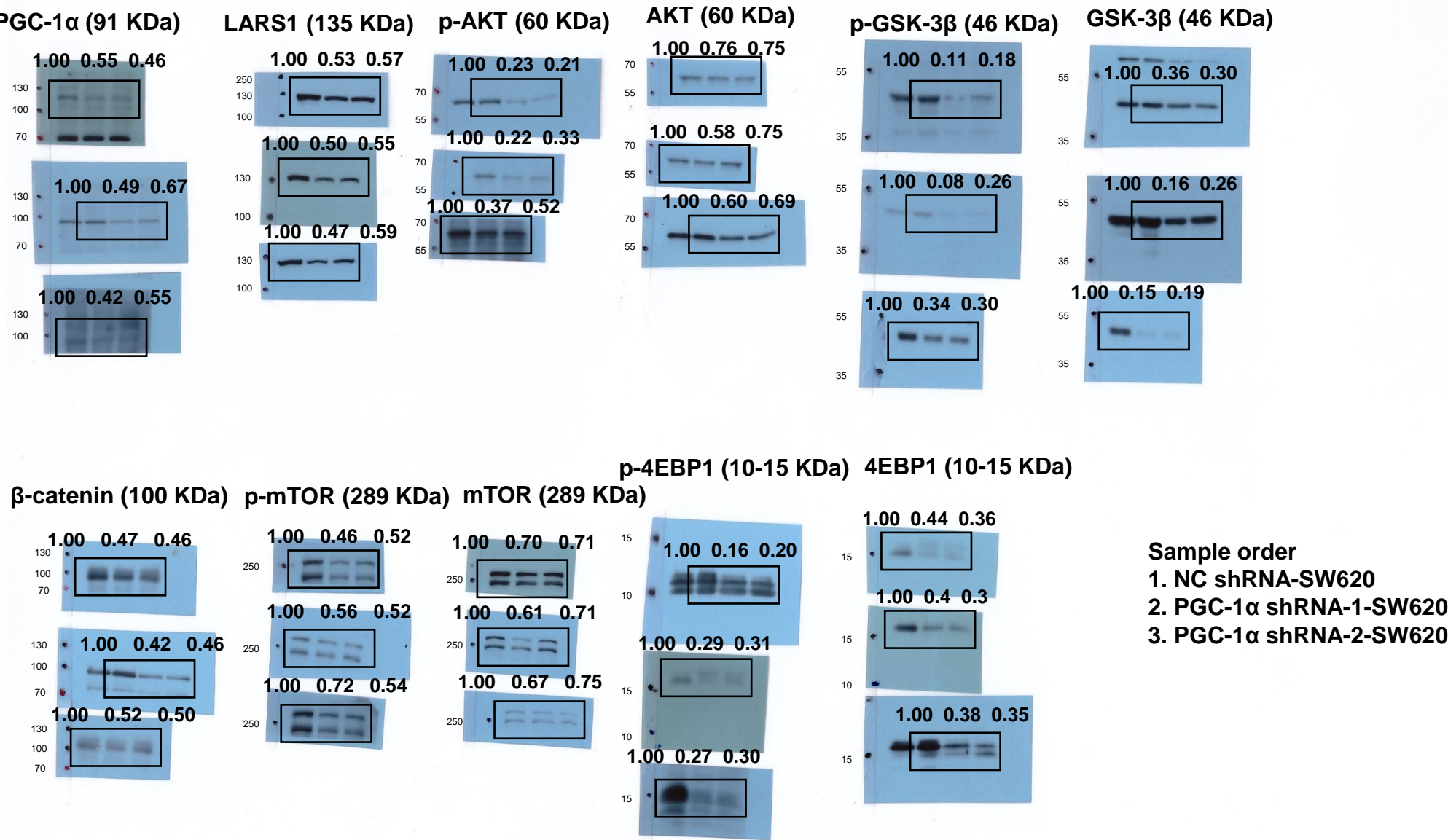
β-actin (42 KDa)



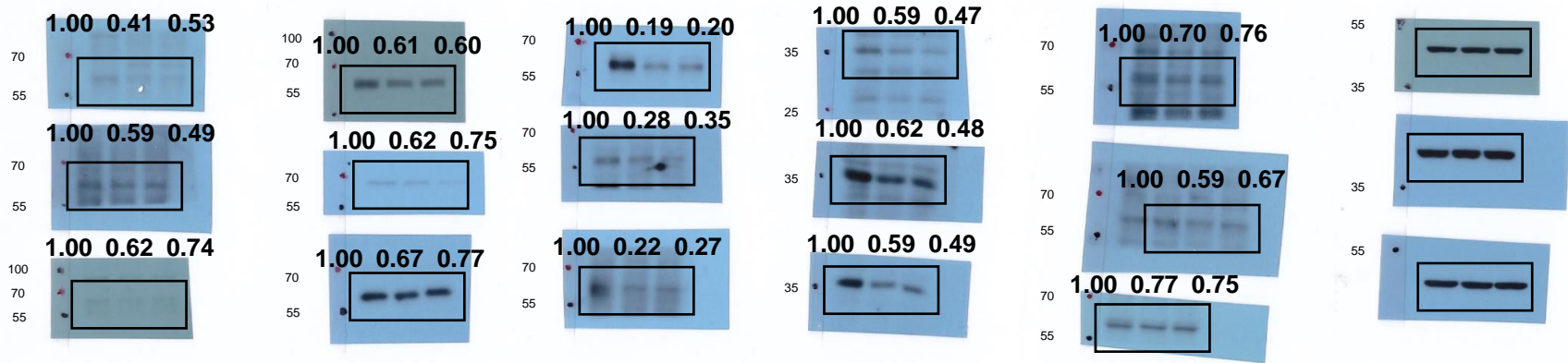
Sample order

1. pCMV6-SW480
2. LARS1-2-SW480
3. LARS1-4-SW480

Figure S8. Uncropped Western blot for Figure 5C.

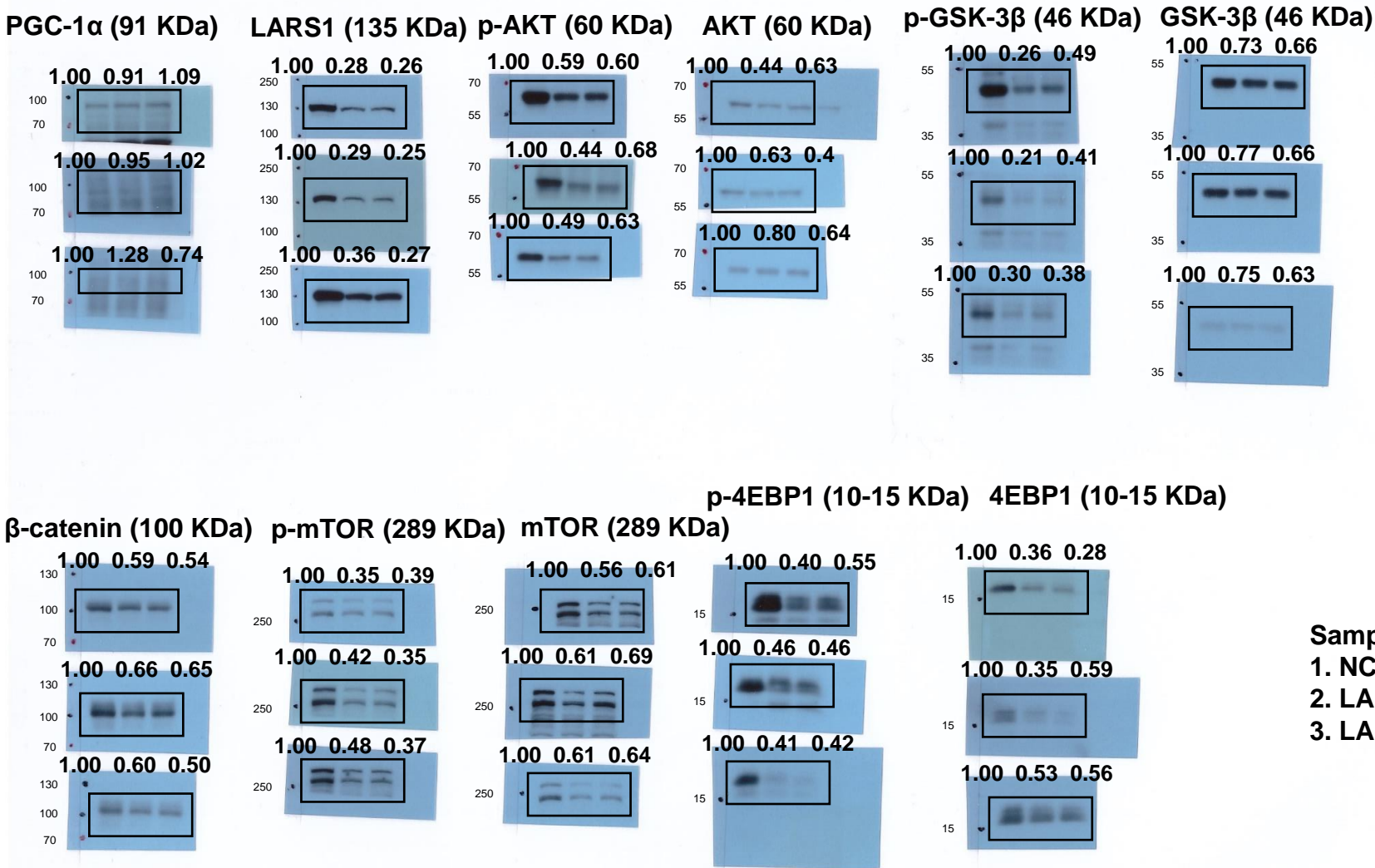


p-S6K1 (70, 85 KDa) S6K1 (70, 85 KDa) c-Myc (57 KDa) Cyclin D1 (35 KDa) Vimentin (57 KDa) β-actin (42 KDa)



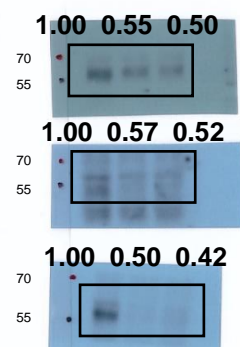
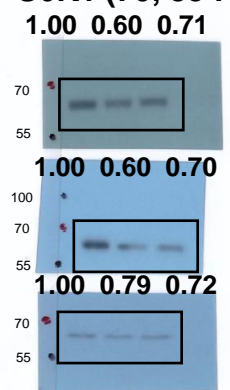
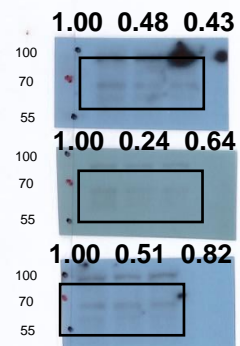
Sample order
1. NC shRNA-SW620
2. PGC-1α shRNA-1-SW620
3. PGC-1α shRNA-2-SW620

Figure S9. Uncropped Western blot for Figure 5D.

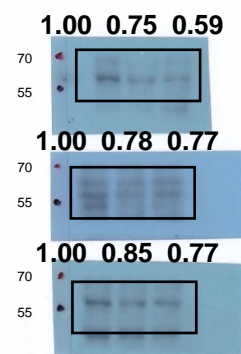
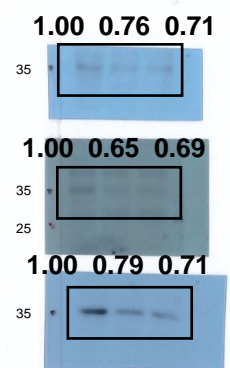


Sample order
1. NC shRNA-SW620
2. LARS1 shRNA-4-SW620
3. LARS1 shRNA-5-SW620

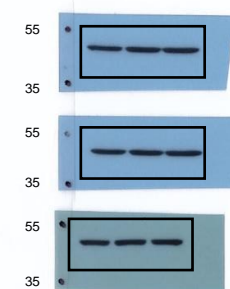
p-S6K1 (70, 85 KDa) S6K1 (70, 85 KDa) c-Myc (57 KDa)



Cyclin D1 (35 KDa) Vimentin (57 KDa)

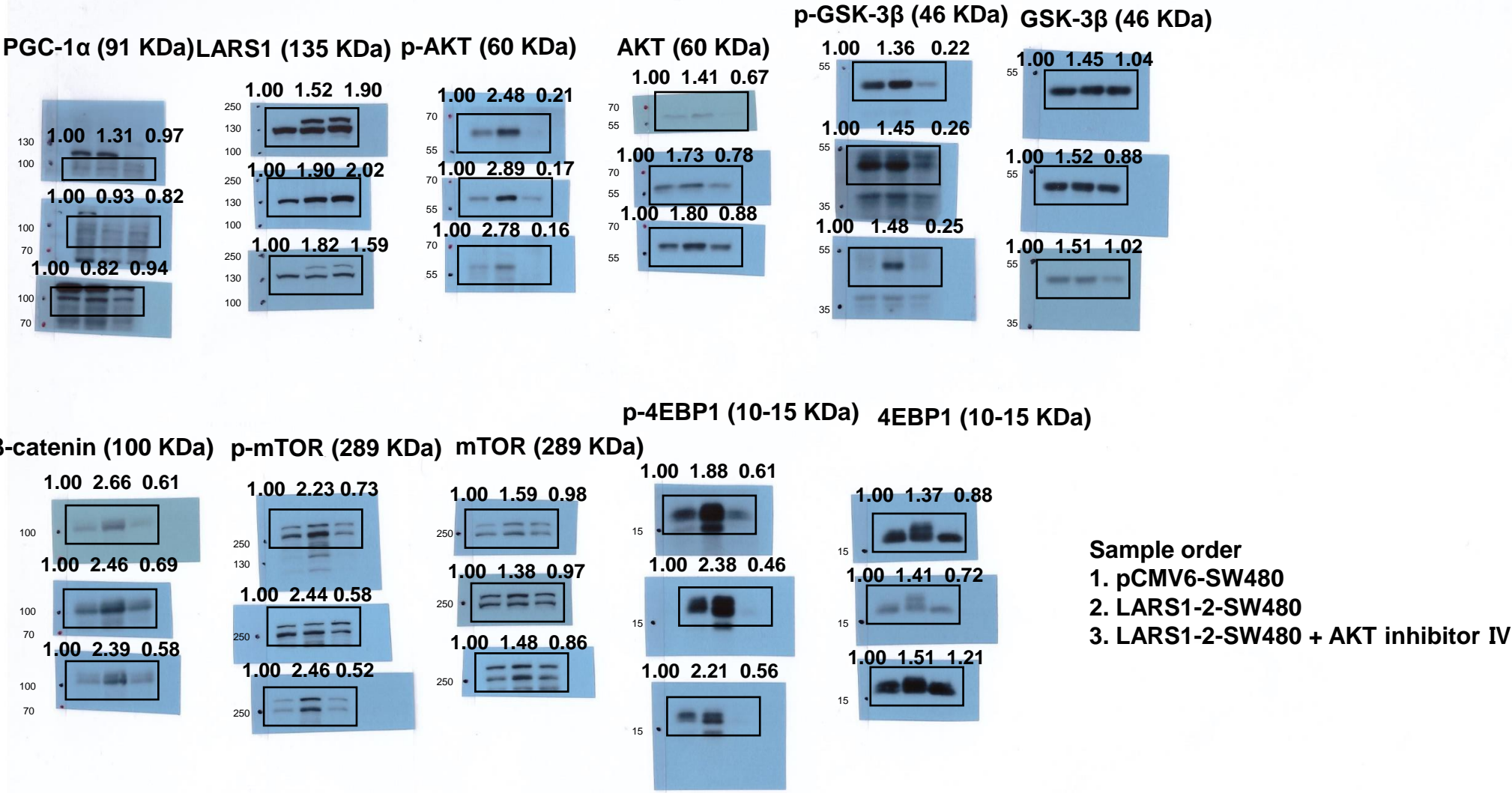


β-actin (42 KDa)

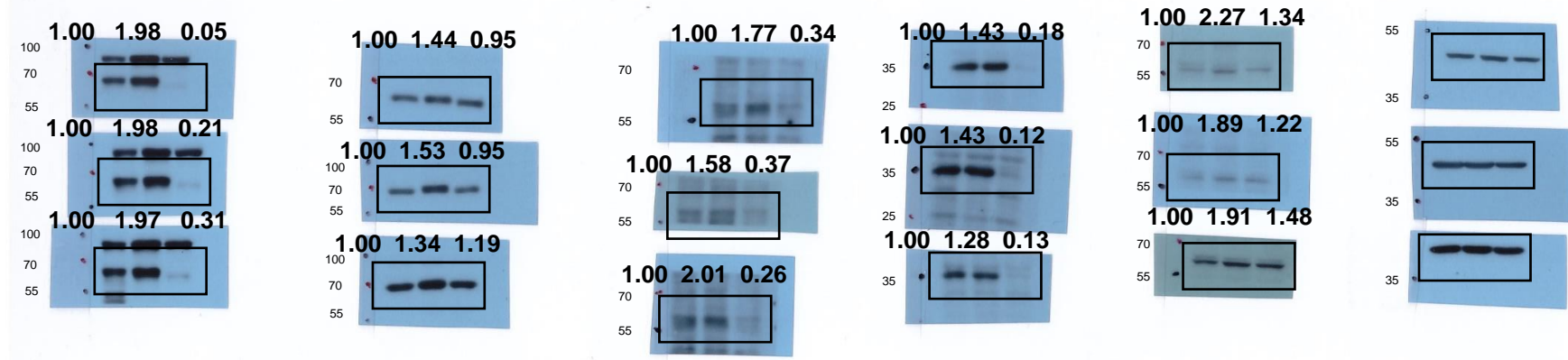


- Sample order**
1. NC shRNA-SW620
 2. LARS1 shRNA-4-SW620
 3. LARS1 shRNA-5-SW620

Figure S10. Uncropped Western blot for Figure 6E.



p-S6K1 (70, 85 KDa) **S6K1 (70, 85 KDa)** **c-Myc (57 KDa)** **Cyclin D1 (35 KDa)** **Vimentin (57 KDa)** **β-actin (42 KDa)**



Sample order
1. pCMV6-SW480
2. LARS1-2-SW480
3. LARS1-2-SW480 + AKT inhibitor IV

Figure S11. Uncropped Western blot for Figure S2B.

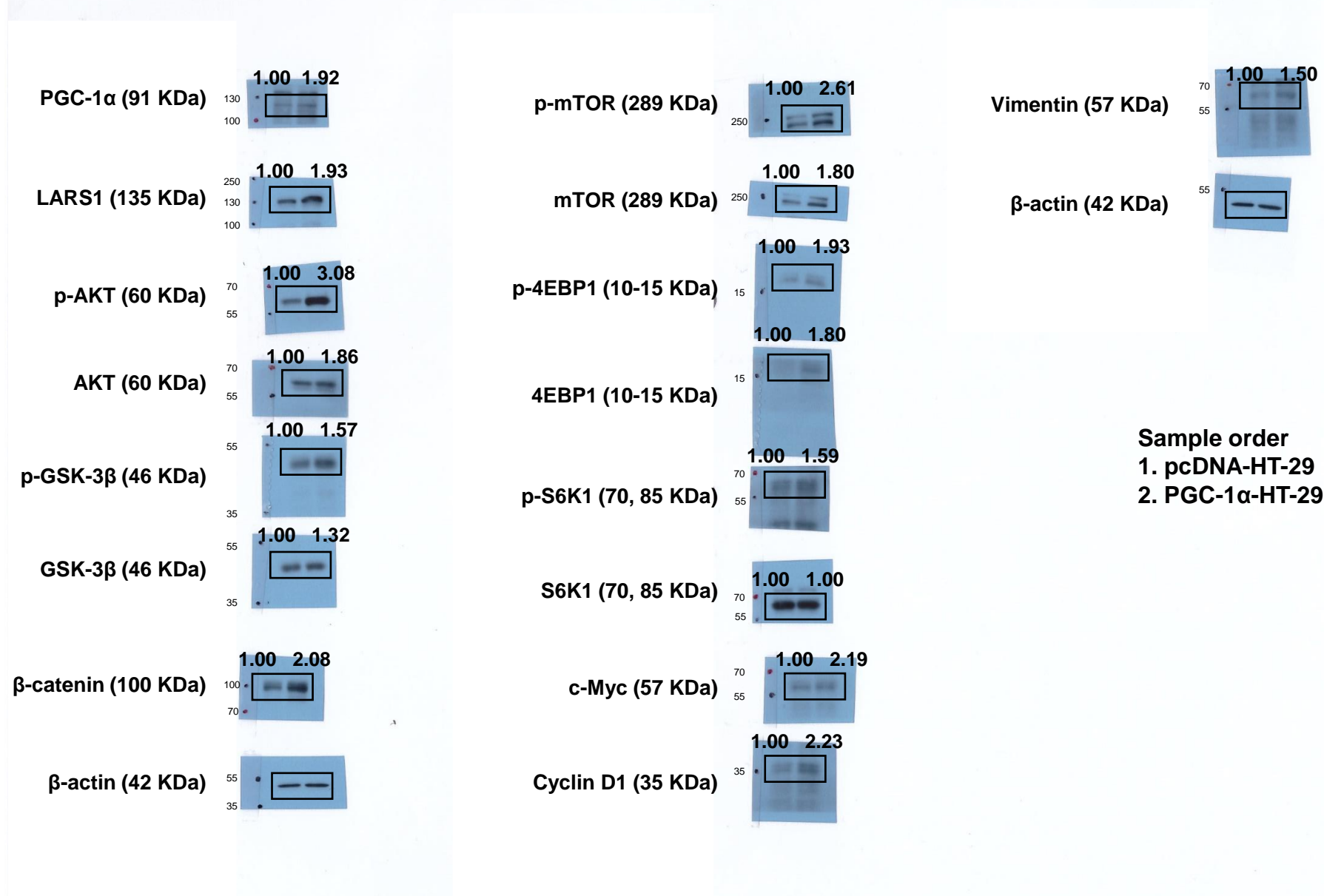


Figure S12. Uncropped Western blot for Figure S2D.

