

Supplemental Figure Legends

Figure S1: FACS analysis of ALDH+ breast cancer stem cells from breast cancer patients.

Figure S2: FACS analysis of ALDH+ breast cancer stem cells from breast cancer cell MCF-7.

Figure S3: Confirmation of overexpression of piR-2158 in MDA-MB-231 (A) and MCF-7 (B) breast cancer cells upon piRNA mimic transfection. Data are presented as mean \pm SEM. ** $p < 0.01$.

Figure S4: piR-2158 overexpression decreased cell proliferation, EMT and cell stemness in MCF-7. A-C: Cell proliferation analysis by CCK8 assay (A) and ki67 staining (B and C) in MCF-7 cells with or without piR-2158 overexpression. D: QRT-PCR analysis of stem cell genes KLF4, NANOG, SOX2 and OCT4 in MCF-7 cells transfected with piR-2158 mimic or control. E: QRT-PCR analysis of EMT markers Slug, Vimentin, Fibronectin and ZEB1 in MCF-7 cells transfected with piR-2158 mimic or control. Data are presented as the mean \pm SEM ($n = 3$). * $p < 0.05$, ** $p < 0.01$.

Figure S5: Knockdown of piR-2158 in MDA-MB-231 cells induced the cell proliferation, migration and cell stemness. A: Validation of piR-2158 knockdown by its antisense inhibitor in MDA-MB-231 cells. B-D: Cell proliferation analysis by CCK8 assay (B) and ki67 staining (C and D) in MDA-MB-231 cells with or without knockdown of piR-2158. E: Wound healing assay in MDA-MB-231 cells with or without knockdown of piR-2158. F: Quantitative analysis of E. G: QRT-PCR analysis of EMT markers Slug, Vimentin, Fibronectin and ZEB1 in MDA-MB-231 cells with or without knockdown of piR-2158. H: QRT-PCR analysis of stem cell genes KLF4, NANOG, SOX2 and OCT4 in MDA-MB-231 cells with or without knockdown of piR-2158. Data are presented as the mean \pm SEM ($n = 3$). * $p < 0.05$, ** $p < 0.01$.

Figure S6: Knockdown of piR-2158 in MCF-7 cells induced the cell proliferation, EMT and cell stemness. A: Validation of piR-2158 knockdown in MCF-7 cells. B-D: Cell proliferation analysis by CCK8 assay (B) and ki67 staining (C and D) in MCF-7 cells with or without knockdown of piR-2158. E: QRT-PCR analysis of stem cell genes KLF4, NANOG, SOX2 and OCT4 in MCF-7 cells with or without knockdown of piR-2158. F: QRT-PCR analysis of EMT markers in MCF-7 cells with or without knockdown of piR-2158. Data are presented as the mean \pm SEM ($n = 3$). * $p < 0.05$, ** $p < 0.01$.

Figure S7: Confirmation of overexpression of piR-2158 in 4T1 breast cancer cells. Data are presented as mean \pm SEM. ** $p < 0.01$.

Figure S8: GSEA analysis of the differently expressed genes (DEGs) indicating their enrichment in the pathways including Wnt signaling, EMT, stem cell pluripotency, etc.

Figure S9: Expression analysis of *IL11* in MDA-MB-231 cells after transfection with piR-2158 and/or FOSL1. Data are presented as mean \pm SEM. * $p < 0.05$, ** $p < 0.01$.

Figure S10: piR-2158 suppressed tube formation directly by targeting *IL11* in HUVECs. A: Overexpression of piR-2158 in HUVECs. B: Downregulation of *IL11* by piR-2158 overexpression in HUVECs. C: Representative images of HUVECs tube formation with or without overexpression of piR-2158. Data are presented as mean \pm SEM. * $p < 0.05$, ** $p < 0.01$.

Figure S11-S14: The original images of western blots.

Figure S1

Primary tumor cells from BC patients

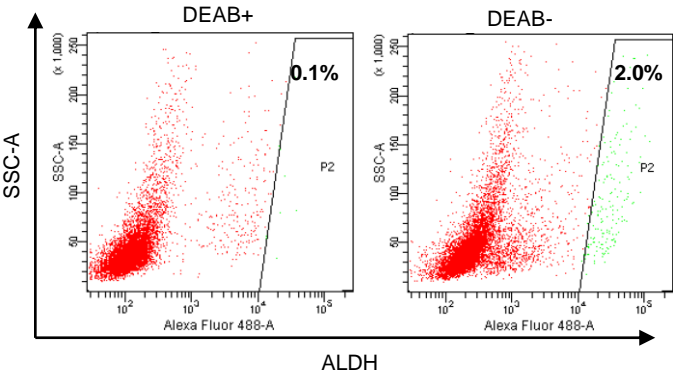


Figure S2

MCF-7

DEAB+

DEAB-

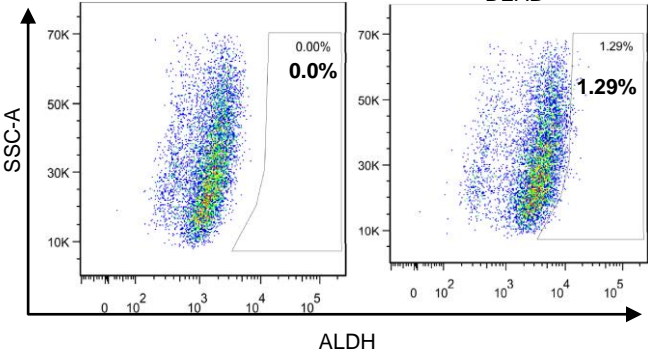


Figure S3

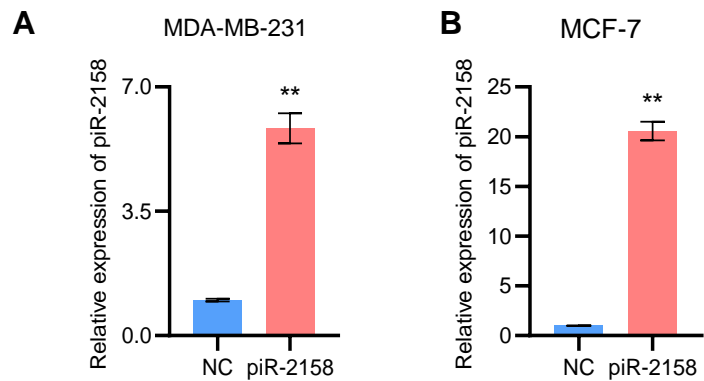


Figure S4

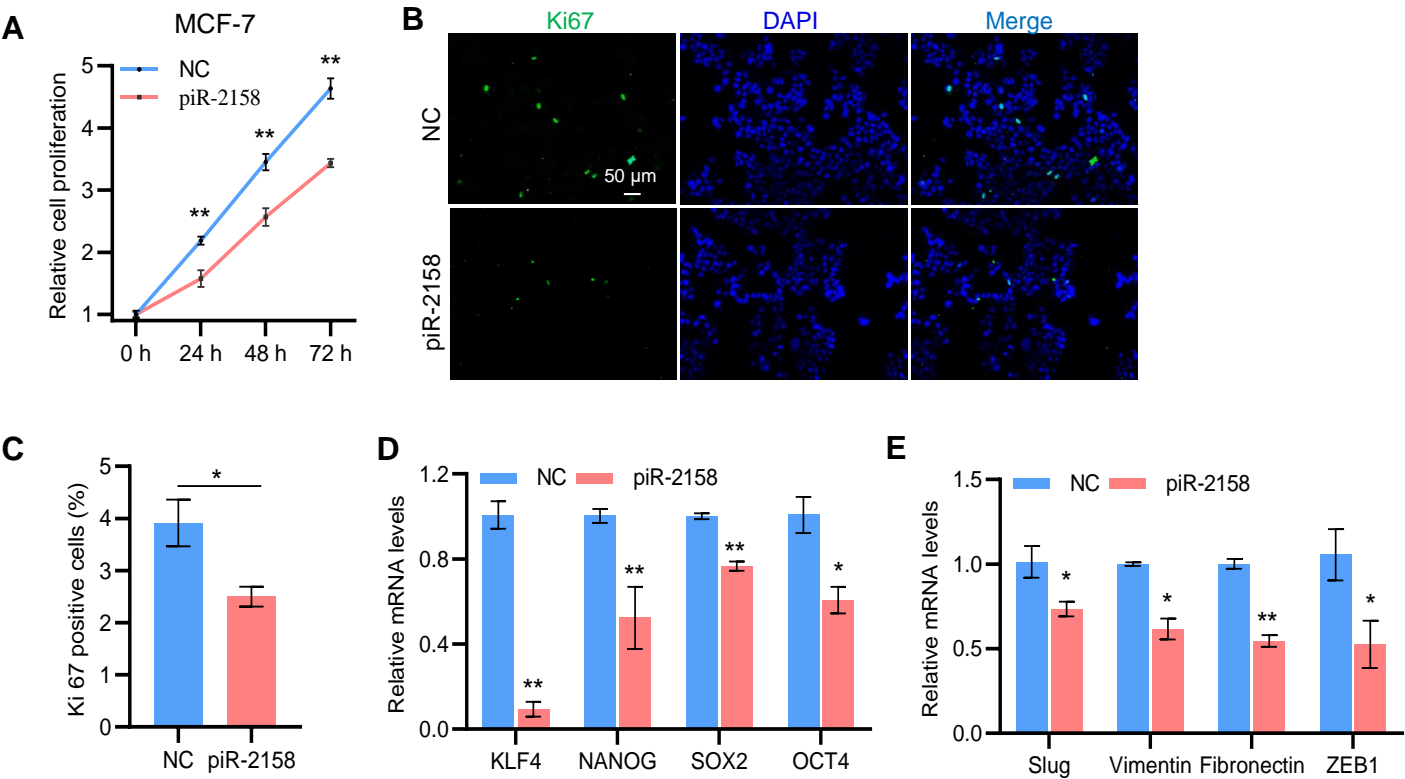


Figure S5

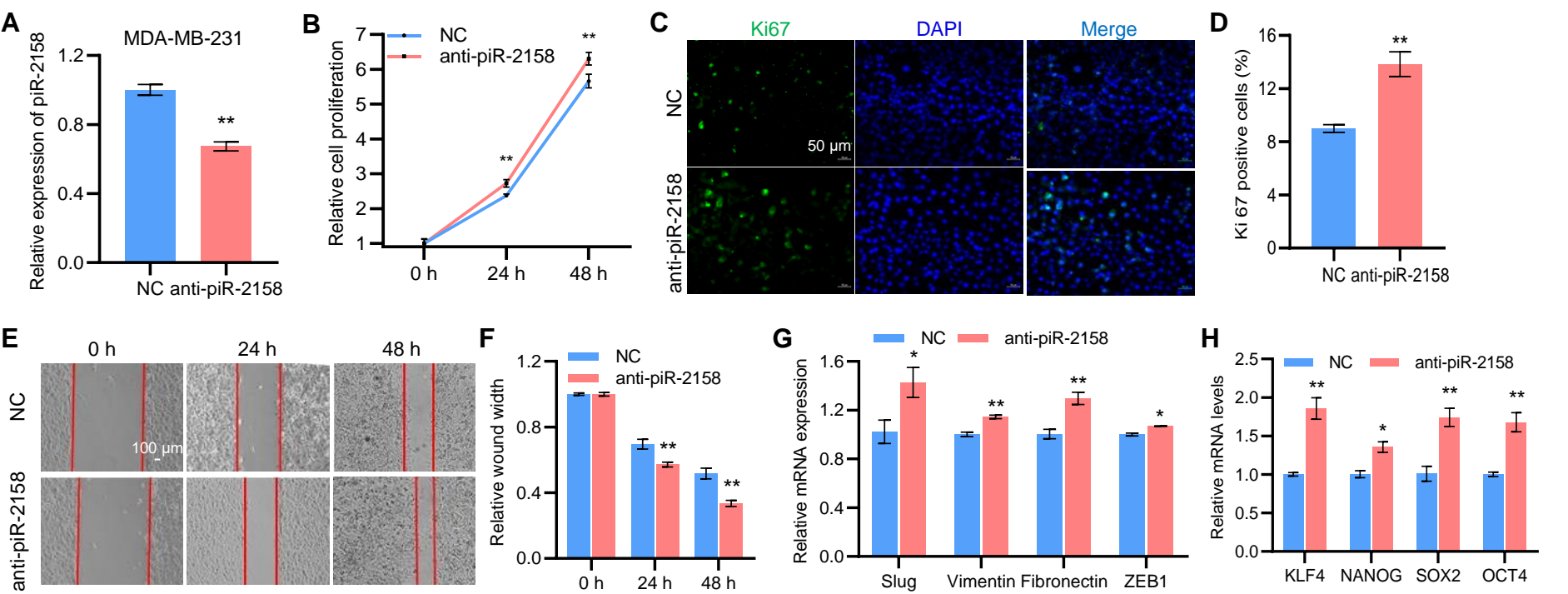


Figure S6

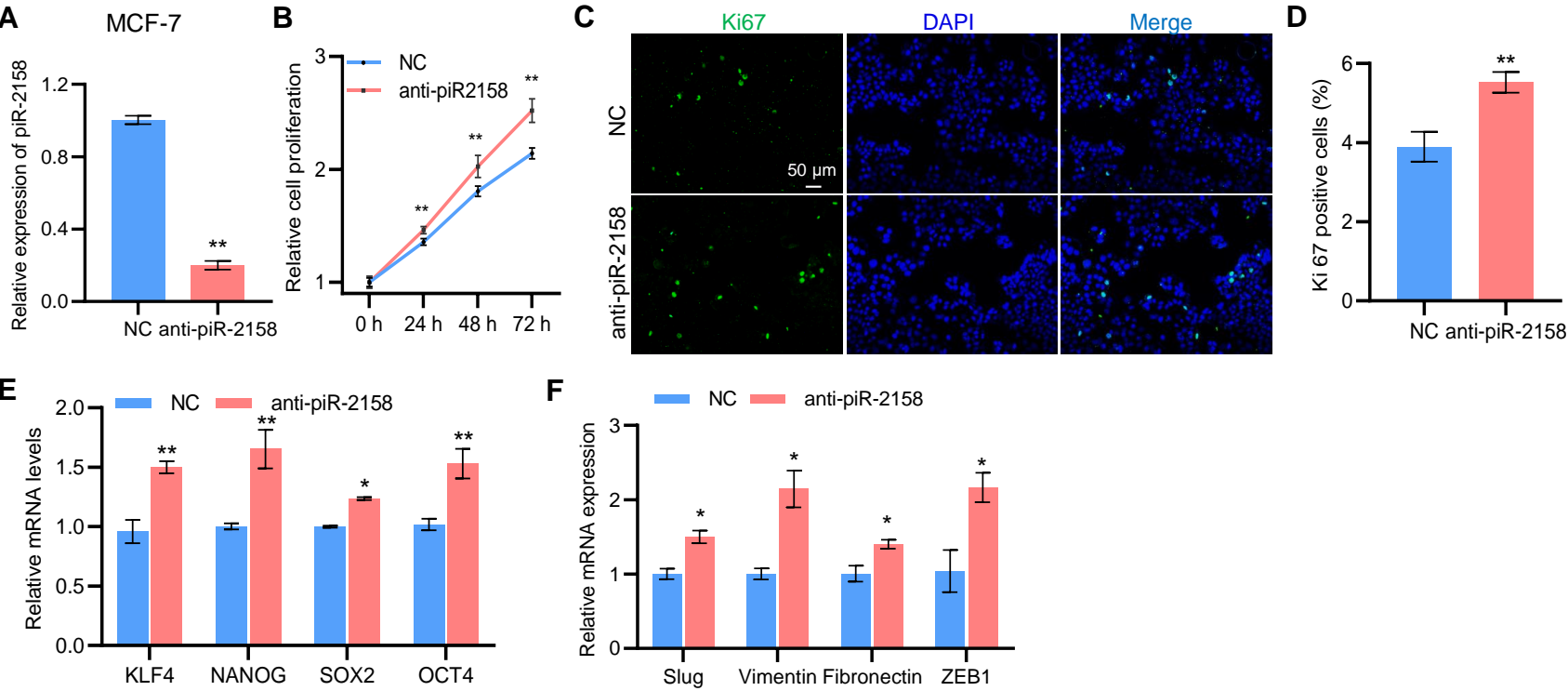


Figure S7

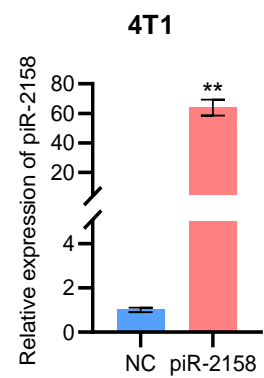


Figure S8

GSEA_pathway_Wikipathway_TOP20

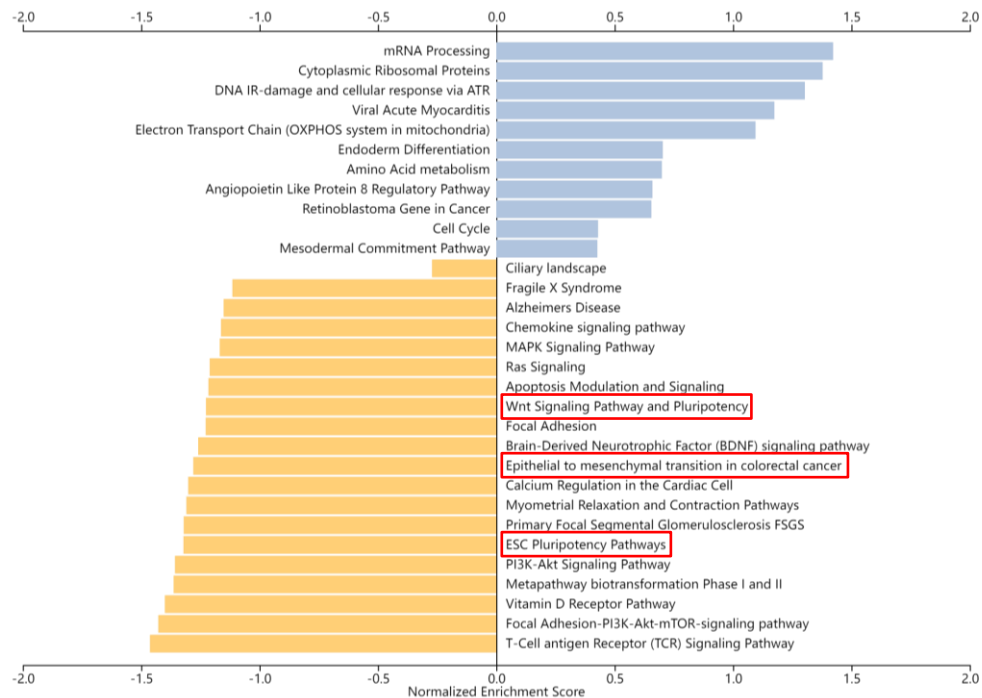


Figure S9

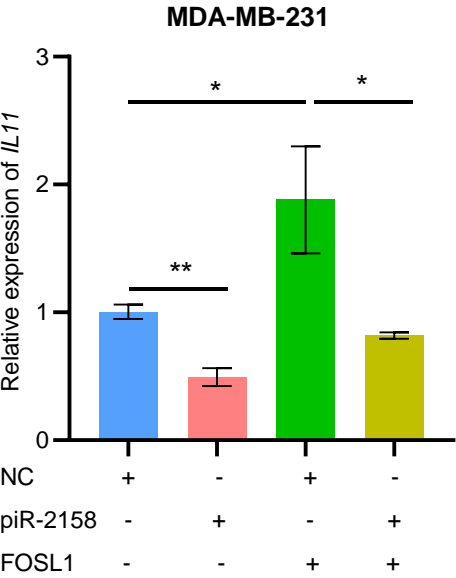
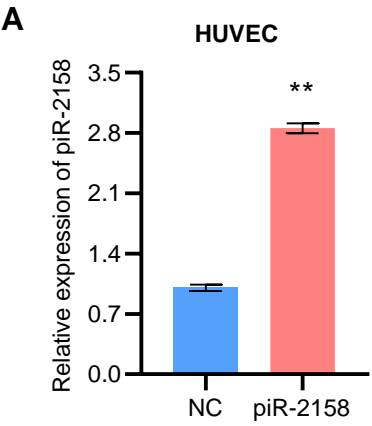
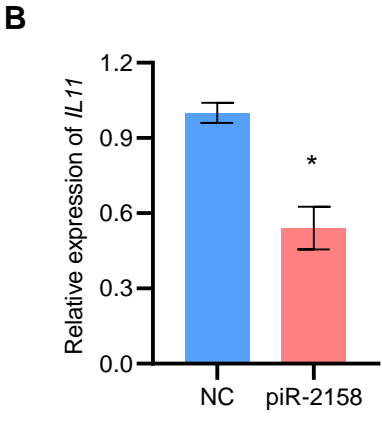


Figure S10

A



B



C

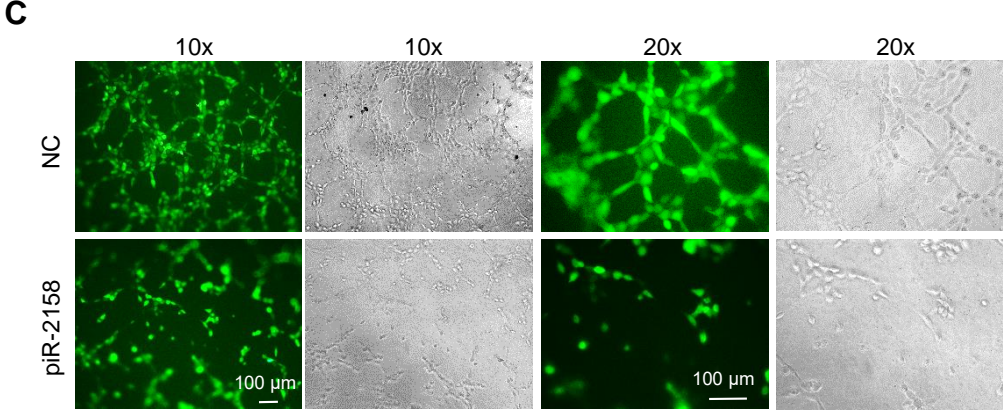


Figure S11 Original uncropped images for Figure 2I

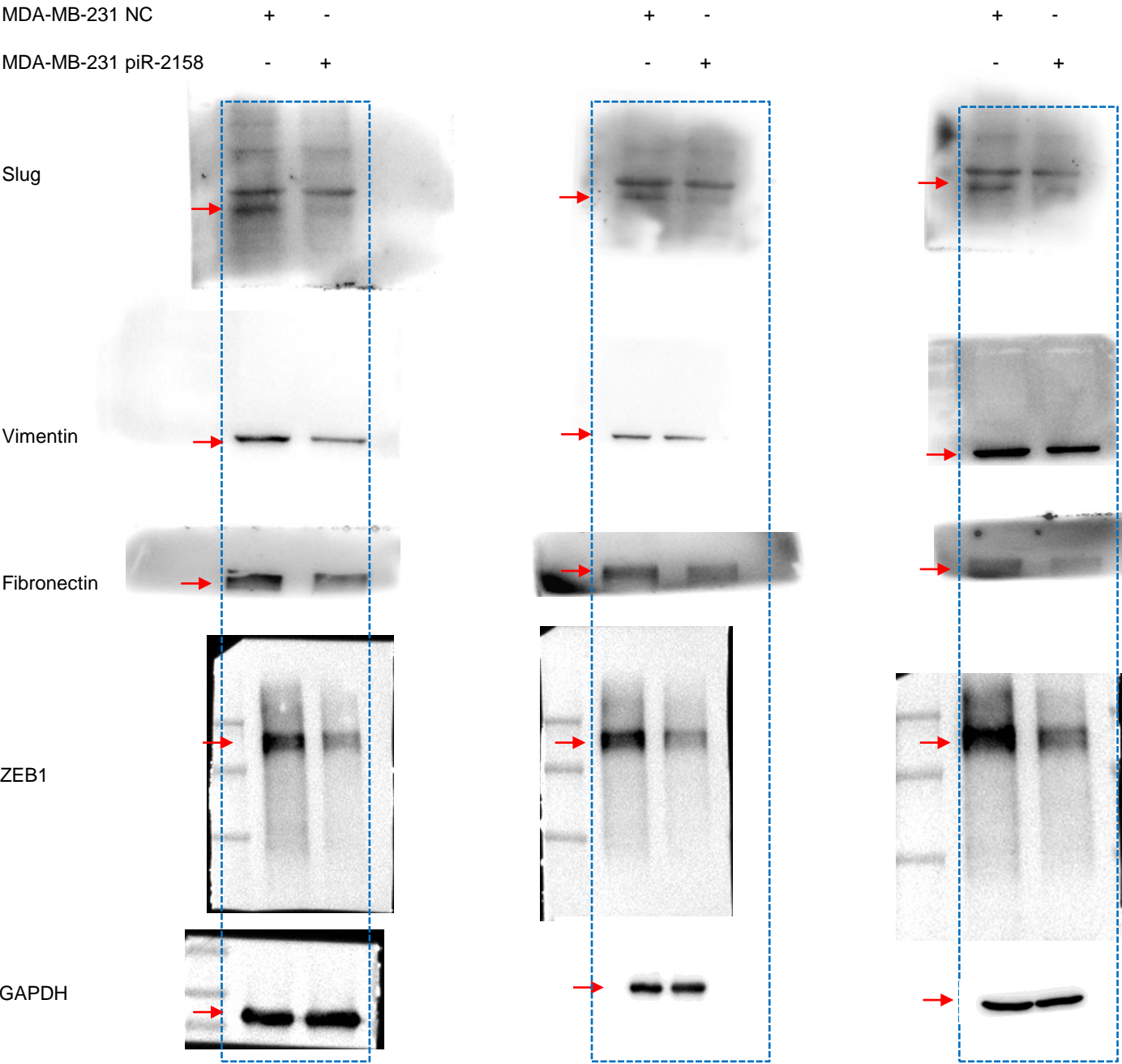


Figure S12

Original uncropped images for Figure 2L

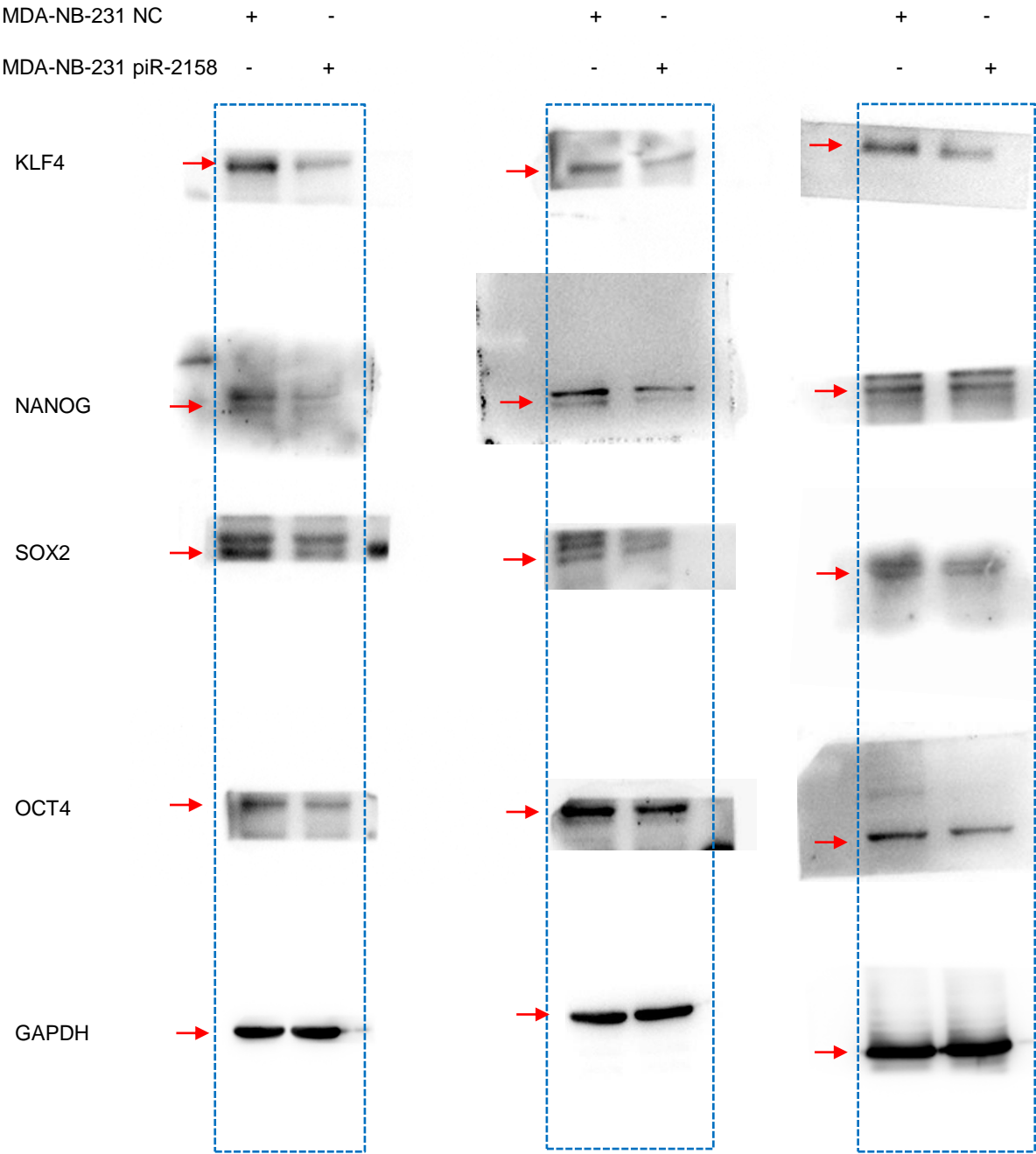


Figure S13 Original uncropped images for Figure 4I

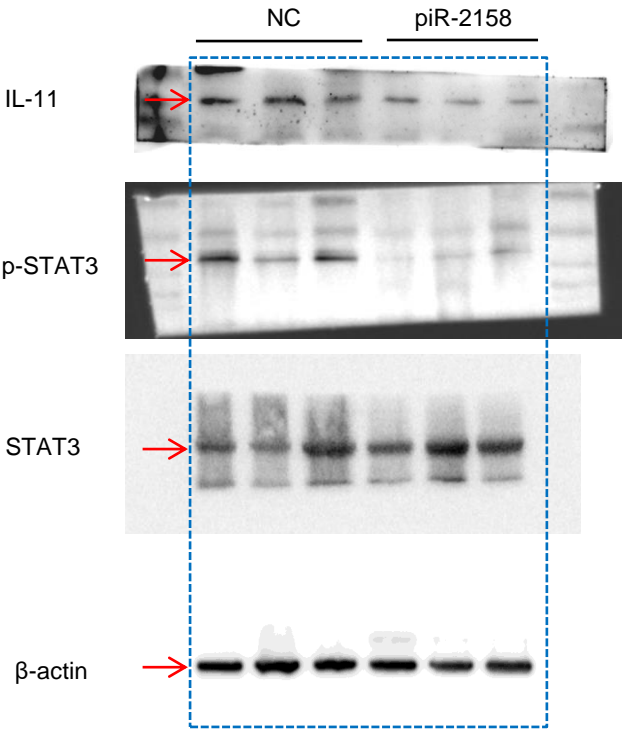


Figure S14 Original uncropped images for Figure 6C

