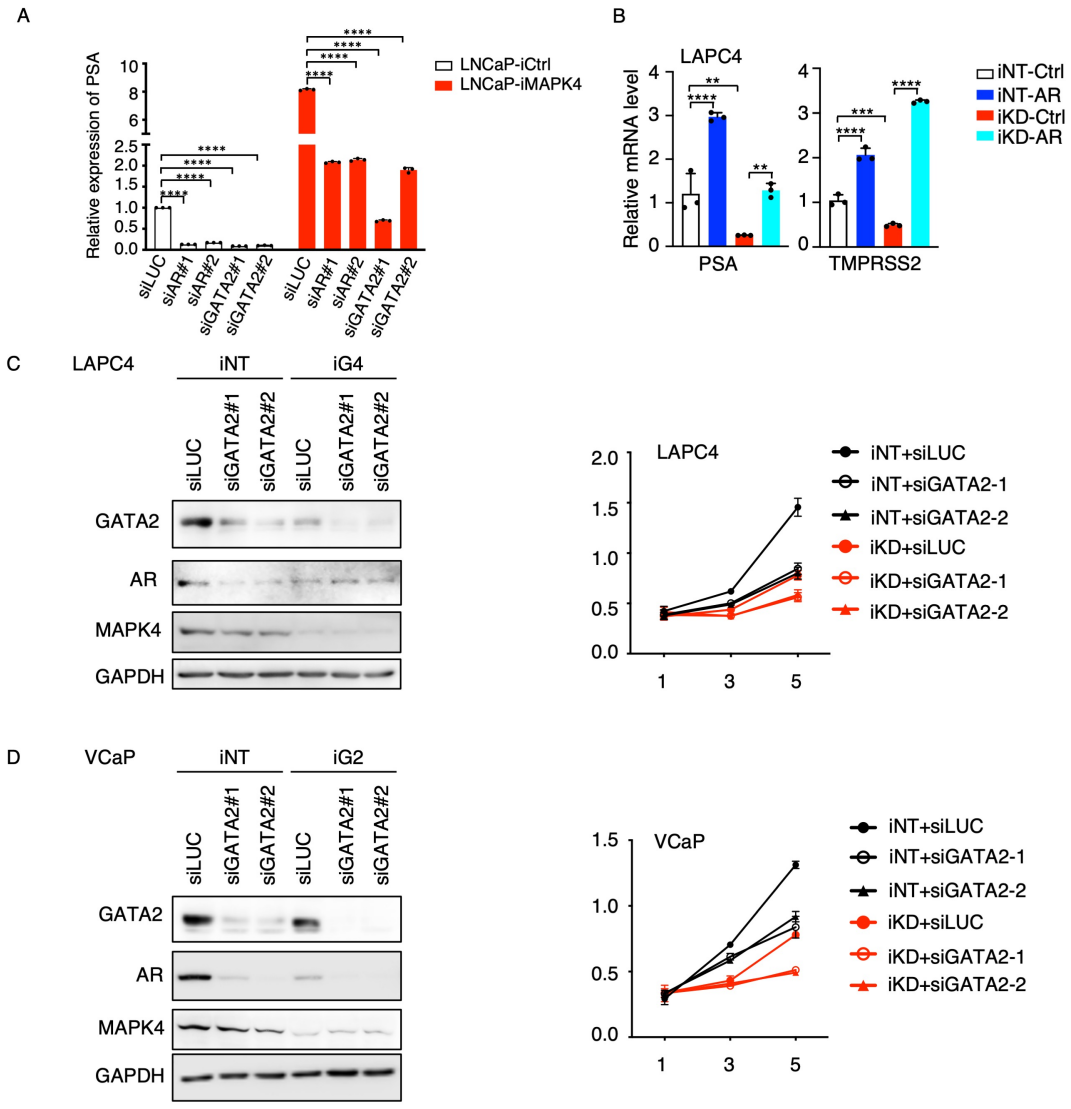
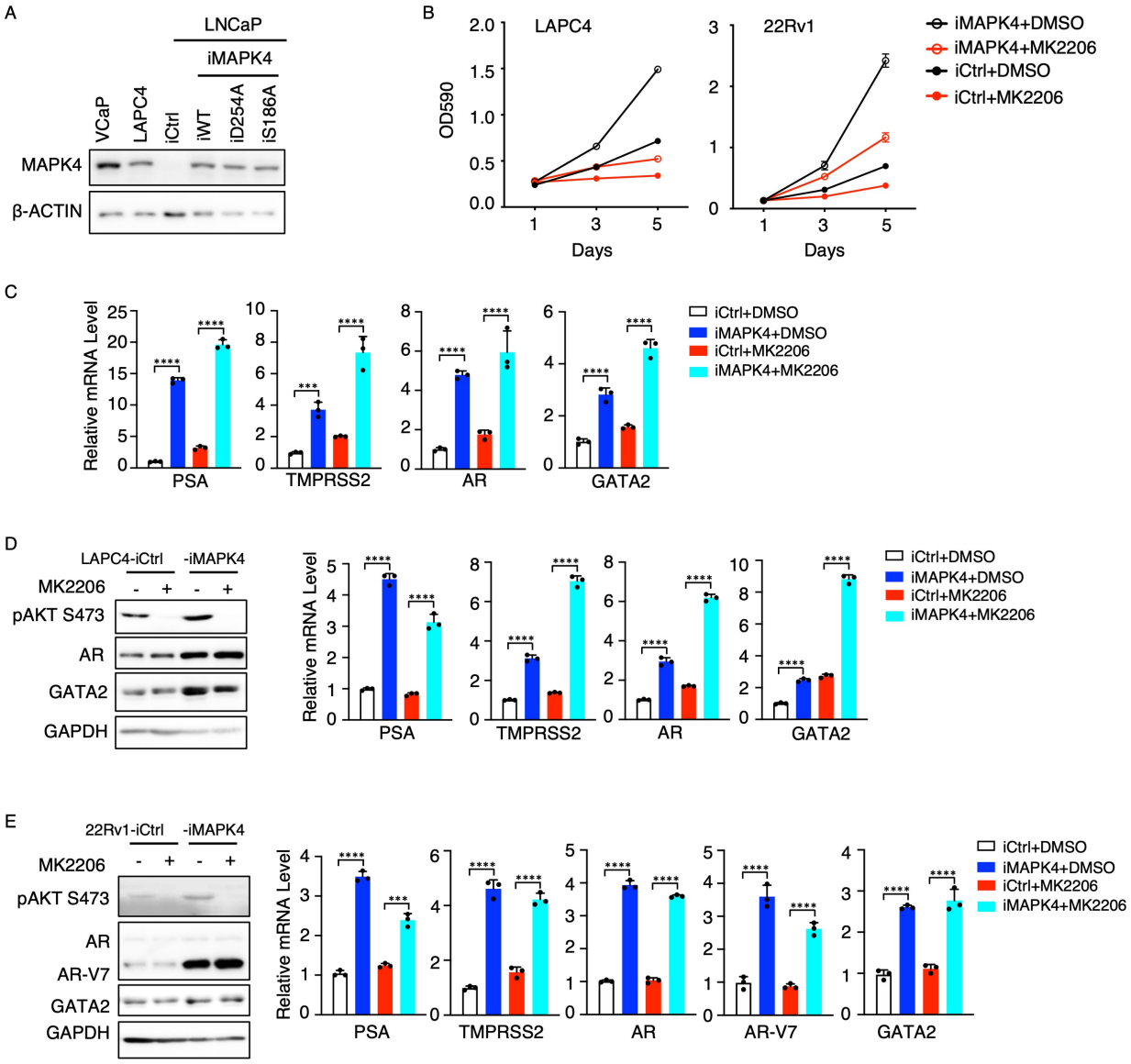


Supplementary Figure 1. **GATA2/AR signaling mediates MAPK4 tumor-promoting activity in prostate cancer.** (**A**) qPCR on PSA expression in the 0.5 μg/ml Dox-induced LNCaP-iMAPK4 and LNCaP-iCtrl cells transfected with siRNA against AR (siAR-1, siAR-2), GATA2 (siGATA2-1, siGATA2-2), or luciferase (siLUC). (**B**) qPCR on PSA and TMPRSS2 expression in the LAPC4 cells with 2 μg/ml Dox-induced knockdown of MAPK4 (ishMAPK4) or control (iNT), with ectopic expression of AR or control (Ctrl). Data represent mean ± S.D. Adjusted *P* values determined by two-way ANOVA followed by Dunnett's multiple comparisons in Panel A and one-

way ANOVA followed by Sidak's comparisons in Panel B. $^{**}P \leq 0.01$, $^{***}P \leq 0.001$, $^{****}P \leq 0.0001$. Western blots and proliferation assays on the 2 μg/ml Dox-induced MAPK4-knockdown (iG4 or iG2) or iNT control (**C**) LAPC4 cells and (**D**) VCaP cells transfected with siRNA against GATA2 (siGATA2-1, siGATA2-2) or luciferase (siLUC as control). Data represent mean ± SEM. Data are representative of at least 3 independent experiments.



Supplementary Figure 2. AKT inhibitor treatment did not repress MAPK4-induced GATA2/AR signaling in prostate cancer cells. (**A**) Western blots comparing the expression levels of 0.5 μg/ml Dox-induced ectopically expressed wild type (iWT) and mutated (iD254A and iS186A) MAPK4 in LNCaP cells and the endogenous MAPK4 in VCaP and LAPC4 cells. (**B**) Proliferation assays on the LAPC4 and 22Rv1 cells with 0.5 μg/ml Dox-induced overexpression of MAPK4 (iMAPK4) or control (iCtrl), treated with 1 μM of AKT inhibitor MK2206 or DMSO

control. Data represent mean ± SEM. (**C**) qPCR on LNCaP cells with 0.5 μg/ml Dox-induced expression of (iMAPK4) or control (iCtrl), treated with 1 μM of AKT inhibitor MK2206 or DMSO control. Proliferation assay and qPCR on the (**D**) LAPC4 and (**E**) 22Rv1 cells with 0.5 μg/ml Dox-induced overexpression of MAPK4 (iMAPK4) or control (iCtrl), treated with 1 μM of AKT inhibitor MK2206 or DMSO control. Data represent mean ± S.D. Adjusted *P* values determined by one-way ANOVA followed by Sidak's multiple comparisons. ***$P \leq 0.001$. ****$P \leq 0.0001$. Data are representative of at least 3 independent experiments.