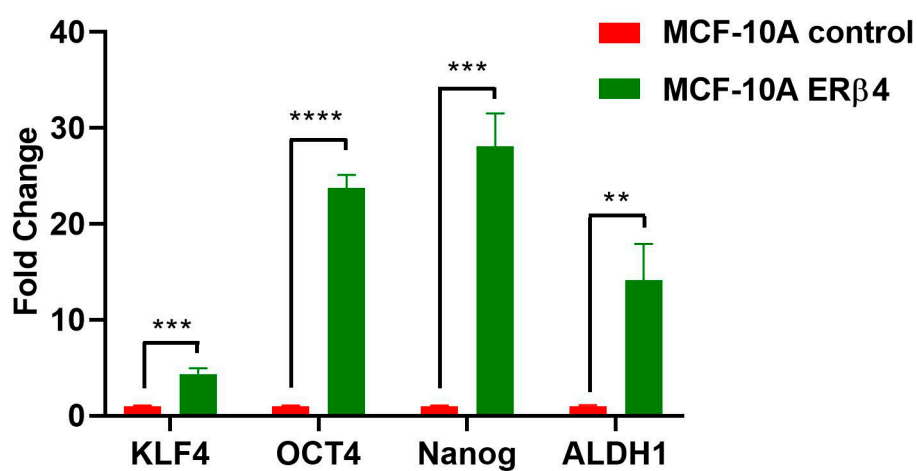


## Supplementary Material

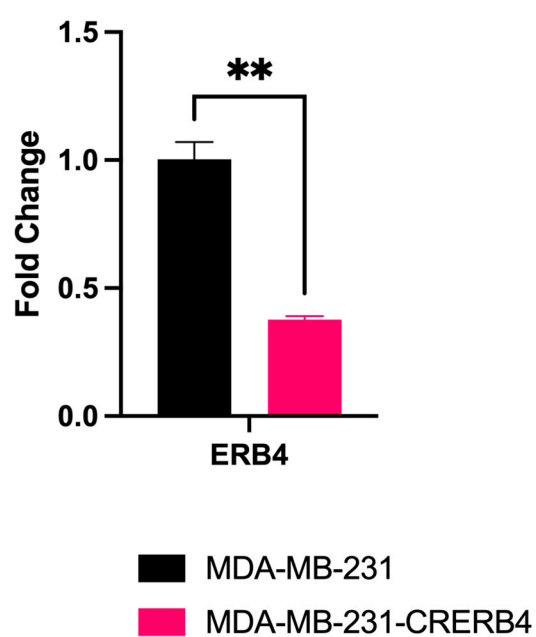
*Figure S1: MCF-10A pluripotent markers induced by ER $\beta$ 4 expression*



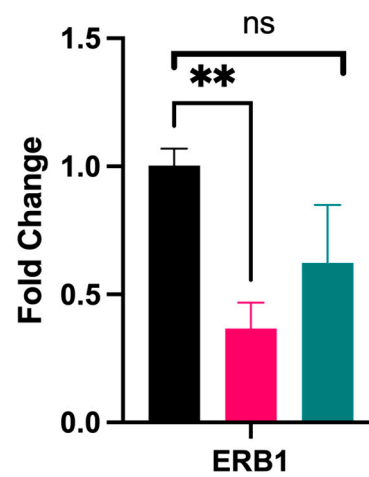
**Figure S1.** MCF-10A cells control transduced and transduced with Lenti- ER $\beta$ 4. Pluripotent factor mRNA levels of KLF4, OCT4, NANOG and the stem cell marker ALDH1 estimated by quantitative PCR. Two – tailed Student’s t-test was used \*\* $P < 0.01$ , \*\*\* $P < 0.001$ , \*\*\*\* $P < 0.00001$ , ns non-significant.

Figure S2: ERB4 knock down using CRSPR

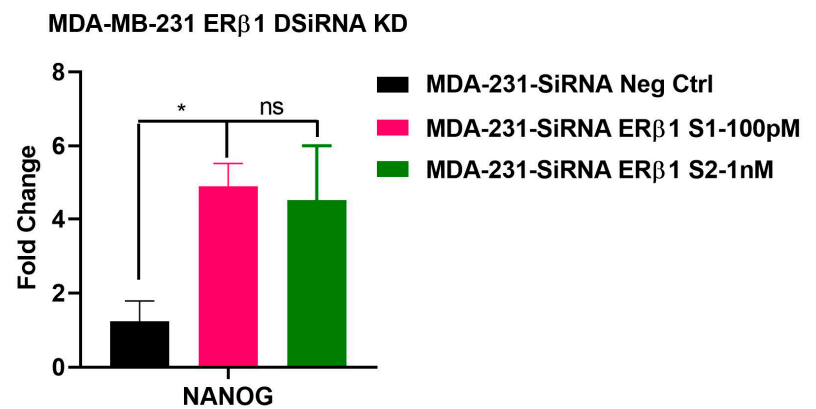
### MDA-MB-231 ERB4 Knock Down



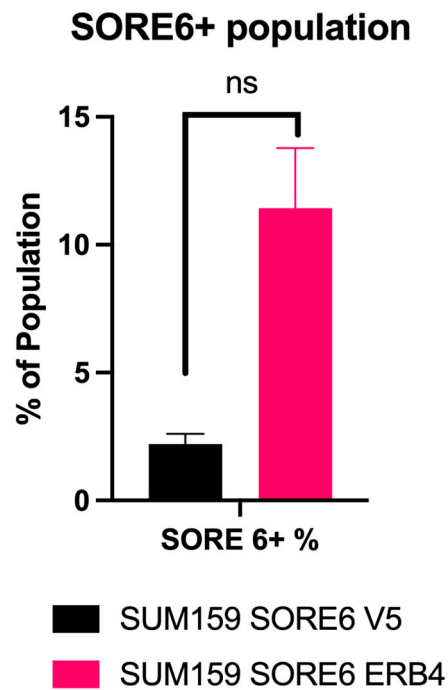
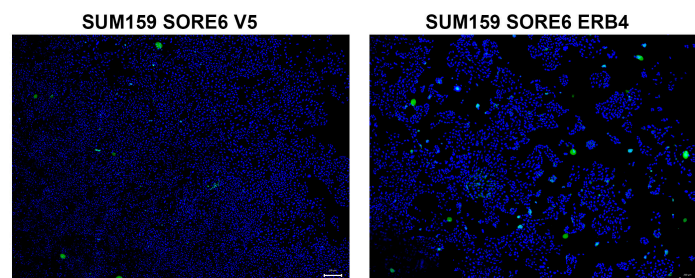
**Figure S2.** Expression level of ER $\beta$ 4 mRNA in CRERB4 MDA-MB-231 cells compared to WT cells using qPCR. Two – tailed Student’s t-test was used  $**P < 0.01$ ,

*Figure S3: Knockdown of ERβ1 using DsiRNA***A****MDA-MB-231 ERB1 Knock Down**

- MDA-MB-231 siRNA Ctrl
- MDA-MB-231 siRNA ERB1.1 100pM
- MDA-MB-231- siRNA ERB1.2 10nM

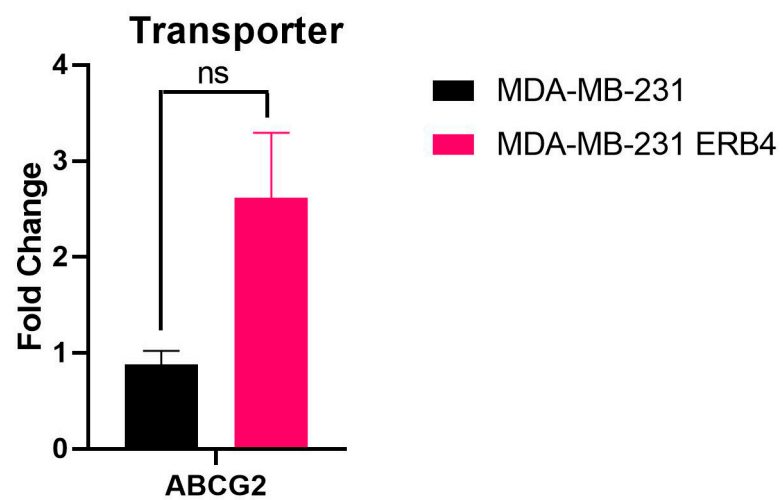
**B**

**Figure S3.** MDA-MB-231 cells transfected with two different DsiRNA at different concentrations A. knock down ER $\beta$ 1. B. Increase of Nanog expression after ER $\beta$ 1 knock down Two – tailed Student’s t-test was used \*\* $P < 0.01$ , *ns* non-significant.

**Figure S4: Count of SORE6+ cells in ERB4 overexpressing cells****A****B**

**Figure S4.** Stable SORE6 SUM159 cells were transfected with empty Lentivirus Vector, and vector expressing ERB4. The cells were grown in duplicate on glass slide and then imaged with Keyence BZ X-800. A. The SORE6-GFP+ cells were counted using the BZX-800 Analyzer and expressed as a ratio of all DAPI stained cells. Two – tailed Student's t-test was used *ns non-significant*. B. Images used for counting the scale bars is 200  $\mu$ m.

Figure S5: Expression of ABCG2 in ERB4 overexpressing cells

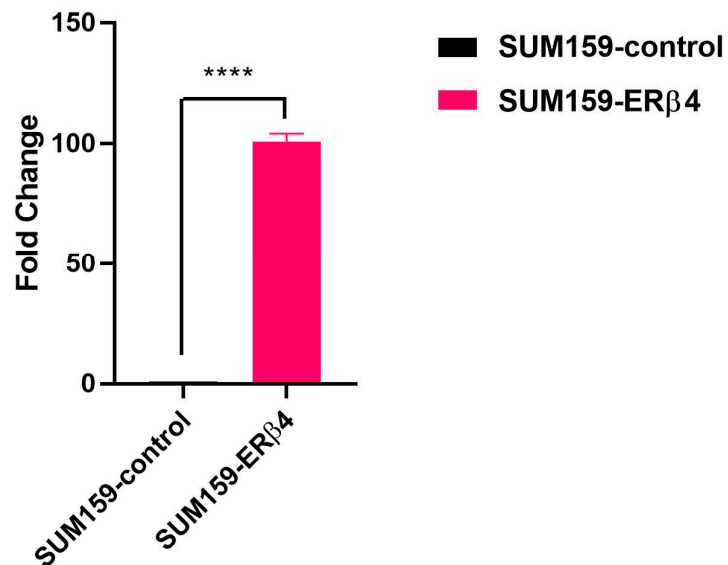


**Figure S5.** MDA-MB-231 transfected with empty Lentivirus Vector, and vector expressing ERB4. The cells were grown in 6 well plates. Expression of ABCG2 was performed using qPCR. Two – tailed Student’s t-test was used *ns non-significant*.

Figure S6. Over expression of ER $\beta$ 4 in SUM159 and MDA-MB-231 cells.

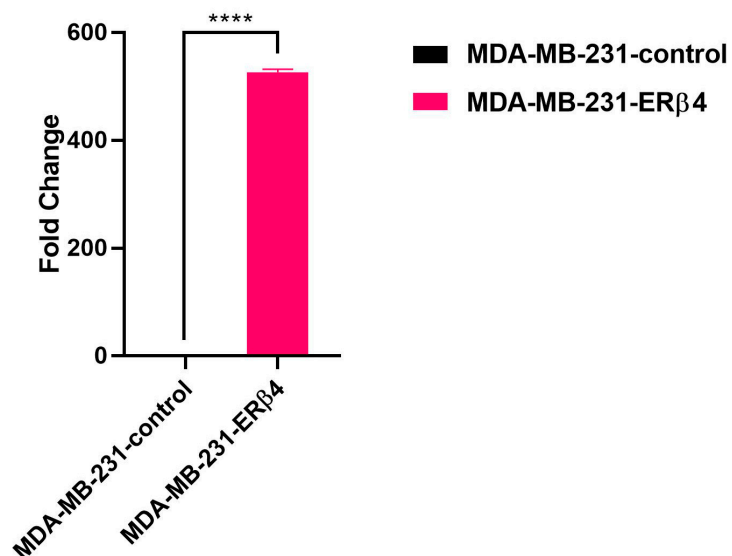
A

### Over expression of ER $\beta$ 4 in SUM159 cells



B

### Over expression of ER $\beta$ 4 in MDA-MB-231 cells



**Figure S6.** A. SUM159 and B. MDA-MB-231 transfected with empty Lentivirus Vector, and vector expressing ER $\beta$ 4. The cells were grown in 6 well plates. Expression of ER $\beta$ 4 was performed using qPCR. Two – tailed Student's t-test was used *ns* non-significant.