

Supplemental Figure Legends

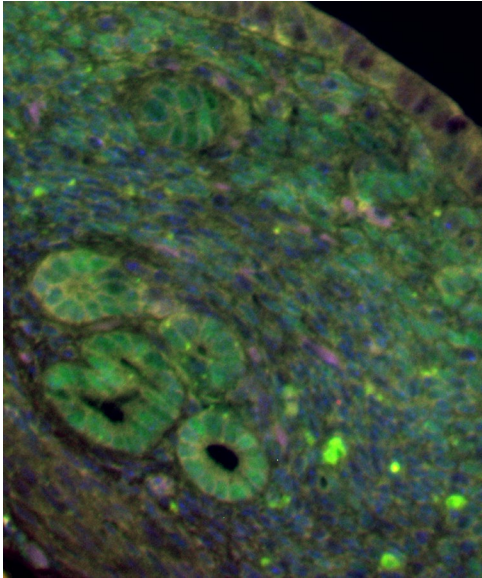
Supplemental Figure 1- Mesenchymal ER α knockout mice express ER α in the uterine stroma in adulthood. Representative images of immunofluorescence on the uterus from control and mesenchymal ER α knockout (ER α Δ M-MMTV-neu) mice from adult 14 week old mice in diestrus stage, immunostained for ER α (green). Images are at 20X magnification. ER α expression visualized in green, nuclei in blue.

Supplemental Figure 2- Mesenchymal ER α knockout have decreased number of TEBs and less epithelial extension than ER α intact mice. **A.** Representative images of TEB counts as depicted in Fig. 3C. **B.** The distance from the nipple to the furthest duct end was measured as a percentage of the distance from the nipple to the end of the fat pad. The mean is graphed \pm the standard deviation. * represents $p < 0.05$. **C.** Summary of Scholl analysis performed on mammary glands from 14-week old mice. * represents $p < 0.05$. **D.** Representative images of carmine-stained mammary whole mounts from 14-week old mice.

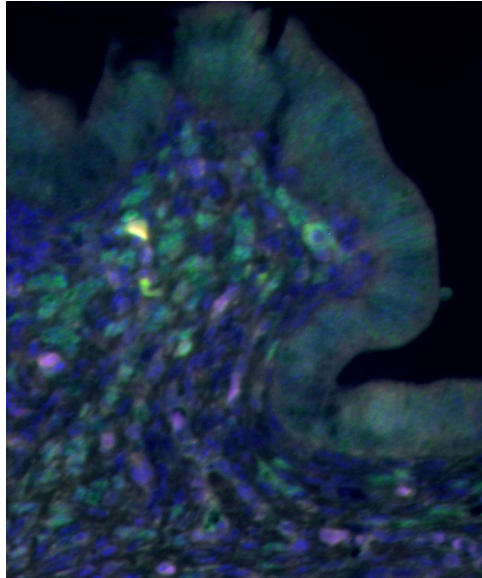
Supplemental Figure 3- EDC exposure and mesenchymal ER α do not affect tumor burden in the MMTV-neu cancer model. The number of tumors observed in each individual mouse is graphed for each genotype and EDC treatment.

$ER\alpha^{fl/fl}$ -MMTV-neu

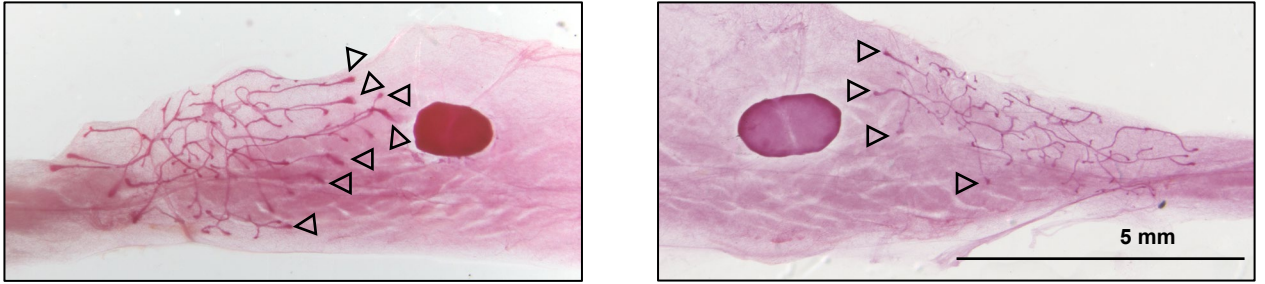
Cre-



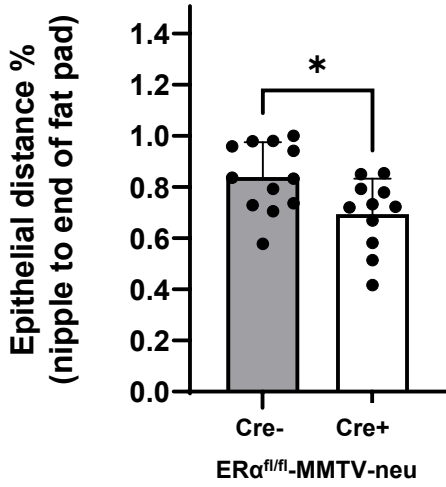
Cre+



A



B



C

| | Ending Radius | Sum of Intersections | regression coefficient (log-log) (k) | Branching Complexity |
|------|----------------|----------------------|--------------------------------------|----------------------|
| Cre- | 20.35 +/- 2.30 | 3569.2 +/- 582.2 | 1.71 +/- 0.77 | 26.61 +/- 1.88 |
| Cre+ | 16.79 +/- 3.68 | 2407.8 +/- 541.4* | 1.72 +/- 0.81 | 27.84 +/- 1.84 |

D

