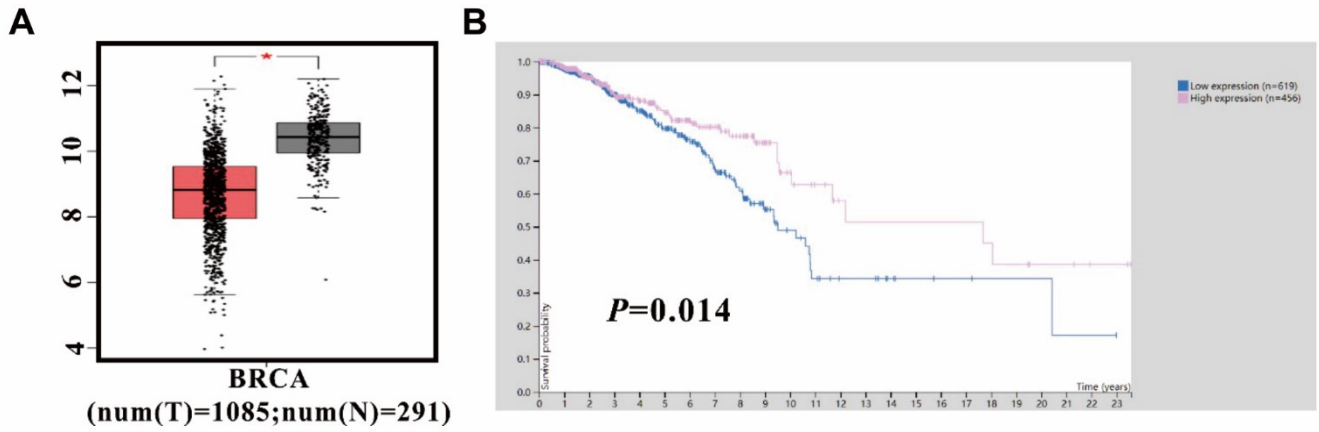


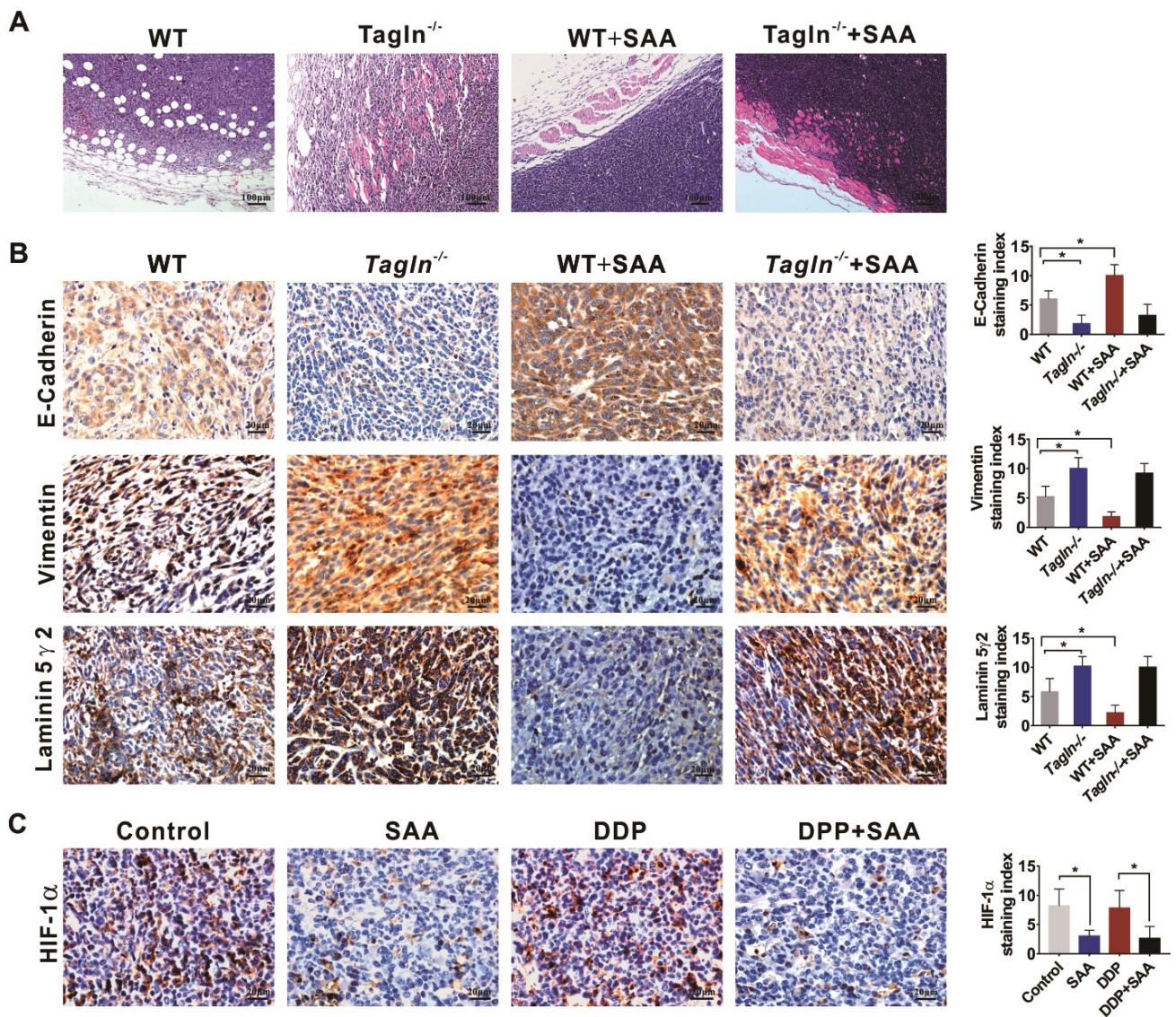
## **Supplemental Information**

**Tumor cell-secreted exosomal miR-22-3p  
inhibits transgelin and induces vascular  
abnormalization to promote tumor budding**

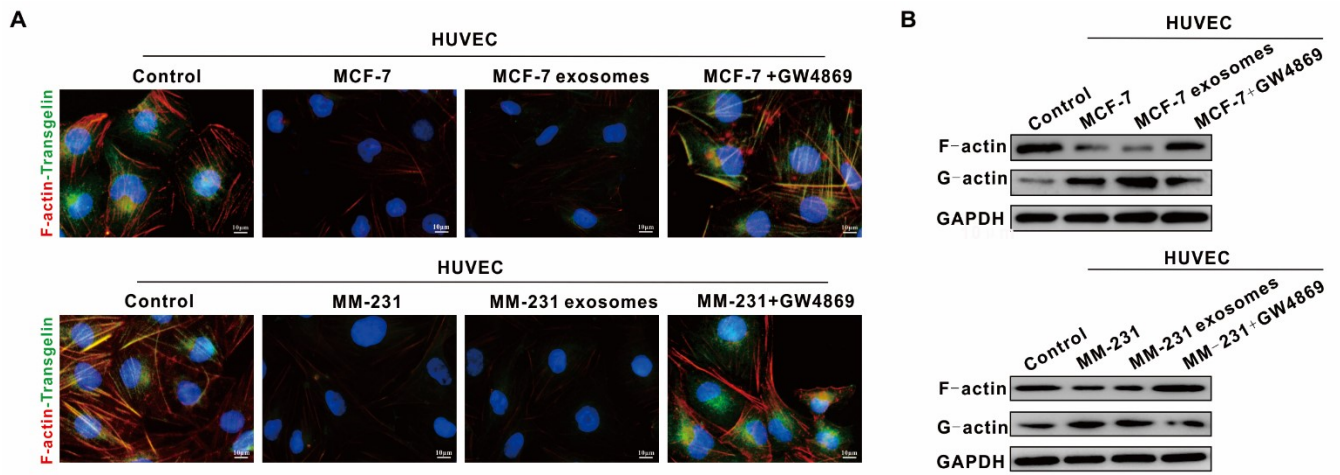
**Yaju Feng, Lumeng Wang, Ting Wang, Ying Li, Qingqing Xun, Renya Zhang, Lin Liu, Lei Li, Wei Wang, Yixuan Tian, Lili Yang, Xiao Zhi, Bijiao Zhou, Xin Chen, Tao Sun, and Yanrong Liu**



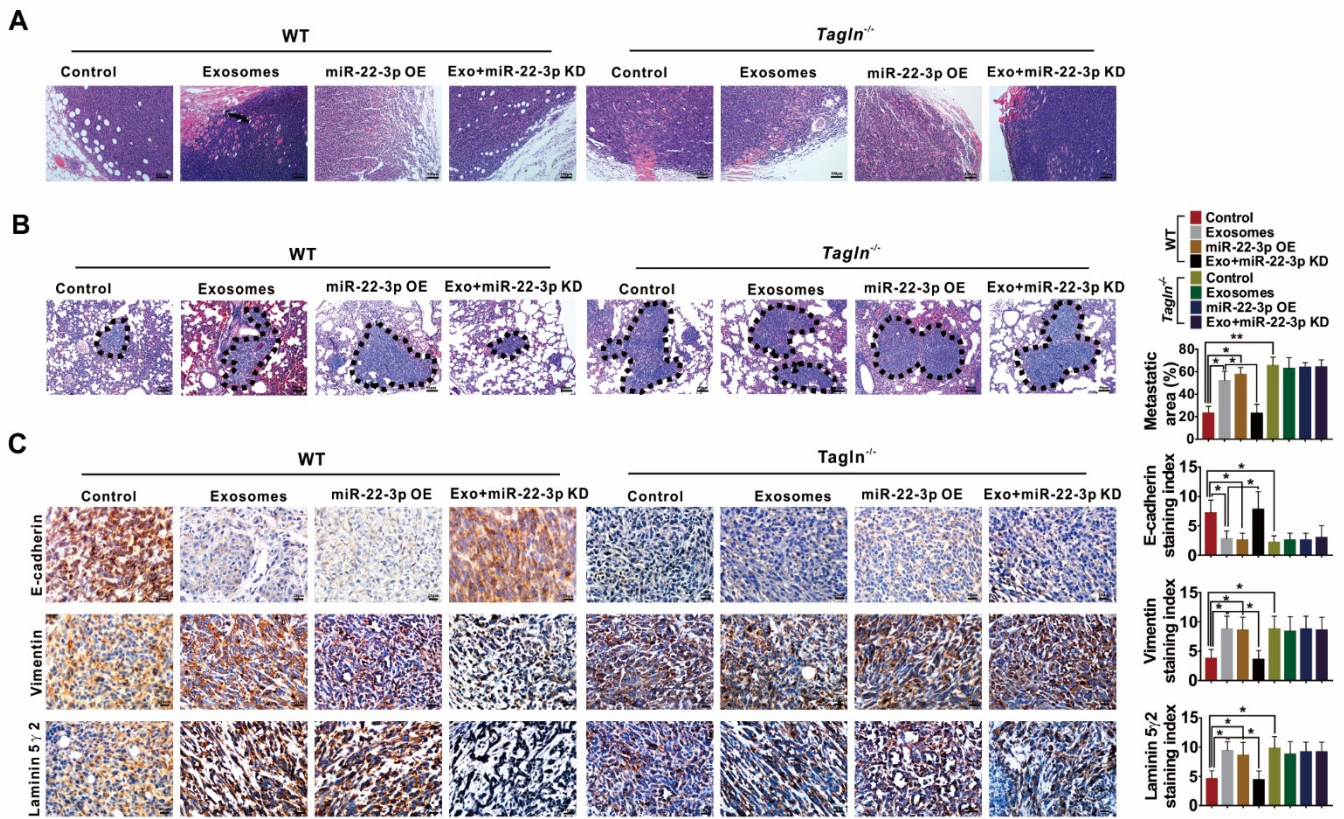
**Figure S1.** Transgelin expression in BRCA tissues was examined via TCGA analysis. A. Transgelin expression in BRCA tissues was lower than that in normal breast tissues. B. Patients with BRCA with high Transgelin expression have longer survival.



**Figure S2.** The invasion areas and expression of EMT related markers in E0771 tumors in WT and Tagln<sup>-/-</sup> mice. A. Hematoxylin and eosin staining of the transplanted tumor tissues showing the invasion of neighboring tissues. B. Expression levels of E-cadherin, vimentin, and laminin 5γ2 in the transplanted tumor tissues of different groups detected using IHC assays. C. The expression of HIF-1α in the transplanted tumor tissues detected by IHC staining.



**Figure S3.** The effects of BC derived exosomes on the expression of Transgelin and F-actin. A. IF staining was performed to analyze the F-actin cytoskeleton and Transgelin. B. F-actin and G-actin levels in HUVECs with different treatments were detected through western blotting.



**Figure S4.** Exosomal miR-22-3p enhanced invasion, metastasis and expression of EMT markers of WT tumors but did not affect *Tagln*<sup>-/-</sup> tumors. A. Representative images of the invasion areas in H&E-stained E0771 tumors from WT and *Tagln*<sup>-/-</sup> mice. B. Lung metastasis areas were examined in H&E-stained tissue sections. The dotted line demarcates the metastasis areas. C. Expression levels of E-cadherin, vimentin, and laminin 5  $\gamma$  2 in the transplanted tumor tissues of different groups detected using IHC assays.

Table S1. Primary Antibodies used for WB, IF and IHC

Antibody	Type	Company	Catalogue Number
E-cadherin	Rabbit polyclonal	Affinity	AF0131
VE-cadherin	Rabbit polyclonal	Abcam	ab33168
Vimentin	Rabbit polyclonal	Affinity	AF7013
GAPDH	Mouse monoclonal	Affinity	AF7021
Laminin 5 $\gamma$ 2	Mouse polyclonal	Merck Millipore	sc-13587
CD34	Mouse monoclonal	Invitrogen	MA1-19229
PDGFR $\beta$	Rabbit polyclonal	Affinity	AF6133
COL IV	Mouse monoclonal	Abcam	ab86042
Transgelin	Rabbit polyclonal	Abcam	ab155272
CD63	Rabbit polyclonal	Affinity	DF2305
TSG101	Rabbit polyclonal	Affinity	DF8427
Hsp70	Rabbit polyclonal	Affinity	AF5466
$\beta$ -actin	Mouse monoclonal	Affinity	T0022