

## Oligo sequences used in this study

Primer name	Sequence (from 5'to 3')
ESM1 shRNA1-F	GATCCGGCCGCCTGGAGCAATAATTATTCAAGAG
ESM1 shRNA1-R	ATAATTATTGCTCCAGGCGGCCTTTTTTCTCGAGG
ESM1 shRNA1-R	AATTCCTCGAGAAAAAAGGCCGCCTGGAGCAATA
ESM1 shRNA1-R	ATTATCTCTTGAATAATTATTGCTCCAGGCGGCCG
ESM1 shRNA2-F	GATCCGCATGGATGGCATGAAGTGTGTTCAAGAG
ESM1 shRNA2-F	ACACACTTCATGCCATCCATGCTTTTTTCTCGAGG
ESM1 shRNA2-R	AATTCCTCGAGAAAAAAGCATGGATGGCATGAAG
ESM1 shRNA2-R	TGTGTCTCTTGAACACACTTCATGCCATCCATGCG
ESM1 shRNA3-F	GATCCGCATCTGGAGATGGCAATATTTTCAAGAG
ESM1 shRNA3-F	AAATATTGCCATCTCCAGATGCTTTTTTCTCGAGG
ESM1 shRNA3-R	AATTCCTCGAGAAAAAAGCATCTGGAGATGGCAA
ESM1 shRNA3-R	TATTTCTCTTGAAAATATTGCCATCTCCAGATGCG
ESM1-F	GAGGTGTCAGCCTTCTAA
ESM1-R	CAGCATTCTCTTTCACAACT
GADPH-F	TGCCTCCTGCACCACCAACT
GADPH-R	CGCCTGCTTCACCACCTTC

**Supplementary Materials:** Figure S1: Original blots of the Western blot shown Figure.1-2 and Figure.5-6. Figure S2: *ESM1* mRNA expression in MDA-MB-231 cells was efficiently knocked down by all three shRNAs. Figure S3: Bioinformatic analysis

predicts the regulation network of ESM1. Regulation network of ESM1 was constructed using QIAGEN's Ingenuity® Pathway Analysis tools. Table S1: TCGA sample information. Table S2: Clinical information of TCGA samples. Table S3: Tumor volume at different time points after subcutaneous inoculation of ESM1-shRNA1-MDA-MB-231 or control-shRNA-MDA-MB-231 cells. Table S4: Oligo sequences used in this study. Table S5: Drugs targeting the upstream and downstream molecules of ESM1.