**Supplementary Data**

Supplementary Materials and Methods

Supplementary Figure S1. *POSTN* expression is TGF-β dependent in M cells.

Supplementary Figure S2. Co-expression of POSTN and integrin αvβ3 in basal-like breast cancer cell lines.

Supplementary Figure S3. Knockdown of POSTN and ITGB3 in SUM159 cells.

Supplementary Figure S4. Functional validation of POSTN and ITGB3 function using additional shRNA hairpins.

Supplementary Figure S5. Knockdown of POSTN in MIII cells impairs mammosphere formation.

Supplementary Figure S6. Gene sets repressed in SUM159 shPN cells.

Supplementary Figure S7. Conditioned media rescue of the ALDH subpopulation and inhibition of ERK signaling in SUM159 cells.

Supplementary Figure S8. POSTN regulates cancer stem cell phenotypes in Hs578T cells.

Supplementary Figure S9. POSTN expression in breast tumors.

**Supplementary Material and Methods**

*Antibodies and Reagents*

Antibodies used for western blot analysis included periostin (Abcam and BioVendor), phospho-STAT3, total STAT3, phospho-ERK1/2, total ERK, vimentin (Cell Signaling Technology), E-cadherin, N-cadherin (BD Biosciences) and actin (Sigma-Aldrich). Biotinylated anti-integrin αvβ3 (LM609, Millipore), CD61-PE (eBioscience), CD44-APC and CD24-PE (BD Biosciences) were used at the manufacturer’s recommended concentration for flow cytometry. PD184352 and U0126 (Sigma-Aldrich), non-competitive MEK inhibitors, were dissolved in DMSO and used at a concentration of 10 μM and 25 μM, respectively. TGF-β1 (R&D Systems) was reconstituted in 4 mM HCl containing 0.1% BSA and cells were exposed to a final concentration of 10 ng/ml. TNF-α was dissolved in DMSO and used at a final concentration of 10 ng/ml. Cell proliferation was measured by seeding a defined number of cells on day 0 and then assessing the number of viable cells using trypan blue exclusion staining after 72 hours of growth. This increase in cell number was normalized to control cells. Apoptosis was measured using an Annexin-V-PI staining kit (eBioscience).

*shRNA Sequences*

The following sequences were used to construct the shRNA plasmids in the pLKO.1.puro backbone (55):

*POSTN* sh1 sense 5’ – GCTTGGGACAACTTGGATTCT – 3’

*POSTN* sh1 antisense 5’ – AGAATCCAAGTTGTCCCAAGC – 3’

*POSTN* sh2 sense 5’ – GGGAGTAAGCAAGGGAGAAAC – 3’

*POSTN* sh2 antisense 5’ – GTTTCTCCCTTGCTTACTCCC – 3’

*ITGB3* sh1 sense 5’ – GCTCATTGTTGATGCTTATGG – 3’

*ITGB3* sh1 antisense 5’ – CCATAAGCATCAACAATGAGC – 3’

*ITGB3* sh2 sense 5’ – CCTTAGCCTTTGTCCCAGAAT – 3’

*ITGB3* sh2 antisense 5’ – ATTCTGGGACAAAGGCTAAGG – 3’

Plasmids were sequenced prior to transduction and knockdown was confirmed at both the RNA and protein level.

*Primers*

The following primers were used:

*POSTN* forward 5’ – TACAACGGGCAAATACTGGA – 3’

*POSTN* reverse 5’ – CTTGATGATCTCGCGGAATA – 3’

*ITGB3,* forward 5’ – GATGCGAAAGCTCACCAGTA – 3’

*ITGB3* reverse 5’ – GCAAGCAGGTGGTCTTCATA – 3’

*IL6* forward 5’ – AATGAGGAGACTTGCCTGGT – 3’

*IL6* reverse 5’ – GCAGGAACTGGATCAGGACT – 3’

*IL8* forward 5’ – AAGACATACTCCAAACCTTTCCA – 3’

*IL8* reverse 5’ – CCAGACAGAGCTCTCTTCCA – 3’

*IL1A* forward 5’ - CGGGAAGGTTCTGAAGAAGA – 3’

*IL1A* reverse 5’ – TTTCACATTGCTCAGGAAGC – 3’

*ACTB* forward 5’ – CGAGCACAGAGCCTCGCCTTTGCC – 3’

*ACTB* reverse 5’ – TGTCGACGACGAGCGCGGCGATAT – 3’.