SUPPLEMENTAL FIGURE & TABLE LEGEND

Supplemental Figure 1. Transgenic bone marrow transplantation into GFP+ recipient mice resulted in mice with two labeled cell populations. (A) Confirmation by flow cytometry showed recipient mice were GFP +, donor WT mice were RFP +, and donor CD44-/- mice were negative for CD44 expression. (B) Diagram of mouse BMT procedure. (C) Five week post transplant confirmation of bone marrow engraftment. (D) Quantification of non-hematopoietic bone marrow population ($CD45^{neg}/Ter119^{neg}$) by flow cytometry of WT (n=3) versus CD44-/- (n=3) mice shows no significant difference in populations between the groups.

Supplemental Figure 2. Fewer activated myofibroblast incorporation in tumors engrafted in CD44-/- BMT mice compared to WT BMT. Percentage of double positive (DP) stromal cells expressing activated myofibroblasts (SMA or NG2) with (A) donor (β-gal or RFP) BM derived cells in EO771 tumors (n=5) is less in CD44-/-BMT^{WT} mice (0.23%+/-0.06) compared to WT BMT^{WT} mice (0.25%+/-0.07) and (B) SMA/NG2 expressing host-derived (GFP) cells within tumors is increased in CD44-/-BMT^{WT} mice (1.52%+/-0.49%) compared to WT BMT^{WT} mice(1.27%+/-0.36%). (C) Fluorescent images of SMA+ stromal cells in EO771 tumors in CD44-/-BMT^{WT} mice compared to WT BMT^{WT} mice co-stained with BM or host derived markers. Arrowheads emphasize the co-localized expression in each image. (D) Percentages of the DP activated myofibroblasts incorporated into ID8 tumors (n=5) engrafted in BMT mice are significantly greater ($p<0.05$) in BM derived fraction of CD44-/-BMT^{WT} mice compared to WT $BMT^{CD44-/-}$ mice (0.34%+/-0.15% vs 6.3%+/-1.05%); and (E) there is a higher activated myofibroblast population derived from host cells in the CD44-/-BMT^{WT} mice compared to WT $BMT^{CD44-/-}$ mice (1.6%+/-0.26% vs 4.1%+/-1.7%). (F) Fluorescent images of SMA+ stromal cells in ID8 tumors in CD44-/-BMT^{WT} mice compared to WT $BMT^{CD44-/-}$ mice co-stained with BM or host derived markers. Arrowheads emphasize the co-localized expression in each image.

Supplemental Figure 3. Human and murine MSC phenotype shows no difference between knockdown MSC and naïve MSC. (A) Surface marker expression of WT murine MSC. (B) Osteoblast differentiation was stained with alkaline phosphatase and (C) Aliziran red S. (D) Chondrocyte differentiation was confirmed by Alcian blue staining. (E) Surface marker expression of human MSC. (F) Adipocyte differentiation was shown by Oil Red O staining. (G) Osteoblast differentiation was stained with alkaline phosphatase and (H) Aliziran red S. (I) Chondrocyte differentiation was confirmed by Alcian blue staining.All of the differentiation assays were preformed on normal MSC, adenoviral transfected MSC and stable lentiviral transduced shNegMSC and sh44MSC.

Supplemental Figure 4. Protein and RNA expression of CD44 ligands in tumor cell lines and MSC. (A) A survey of human tumor cell lines shows that Skov-3 express the highest levels of OPN compared to MDA-231, Panc1, MCF7 and MDA-468 cells but hyaluronan synthase2 (HAS2) is not highly expressed by tumor cells but by MSC. HAS2 expression is increased in MSC stimulated with TCM suggesting that the CD44 ligands stimulate MSC in both a paracrine and autocrine manner. (B) Skov-3 secrete OPN into the conditioned media that is used to stimulate MSC into TAF.

Supplemental Figure 5. Blocking CD44 expression on MSC inhibits migration *in vitro* and *in vivo*. (A) An *in vivo* tumor migration experiment of intravenously injected ffLuc labeled MSC to Skov-3 tumors shows that MSC migrate to the tumor and the migration is inhibited by 53% when the tumor is injected with a soluble CD44 decoy receptor. (B) CD44 expression by flow cytometry showed a slight decrease in CD44 expression following 30 min TCM compared to naïve cultured MSC and a slight increase in CD44 expression following 24 hr TCM. (C) MSC migration toward TCM was inhibited by MMP inhibitors at 3 concentrations; at 1μM MMPI, the migration inhibition matched that of the soluble CD44 and the hyaluronan antagonist. 1μM is the concentration that MMP14 is inhibited, MMP2 and MMP9 are inhibited at the lower concentrations. (D) By western blot, the cleavage fragments of CD44 are not seen when 1μM MMP inhibitor was used.

Supplemental Table 1. Primers used for PCR