Supplemental Figure 1. (A) Titration of OAC1. CB $CD34^+$ cells were cultured in cytokine-containing medium in the presence of the indicated concentrations of OAC1 and vehicle control (DMSO). Numbers of phenotypic HSC were analyzed by flow cytometry. n=3 CB samples, * indicates $p<0.05$, ** indicates $p<0.01$.

Supplemental Figure 2. Expression of NANOG, SOX2 and levels of H3K4me3, H3K9me3 in OAC1-treated cells. Upregulation of NANOG (A) and SOX2 (B) expression were observed in OAC1-treated cells. n=3, * indicates $p<0.05$, ** indicates $p<0.01$. The levels of H3K4me3 (C) and H3K9me3 (D) did not show significant differences between vehicle and OAC1-treated cells. n=3, N.S. indicates $p>0.05$.

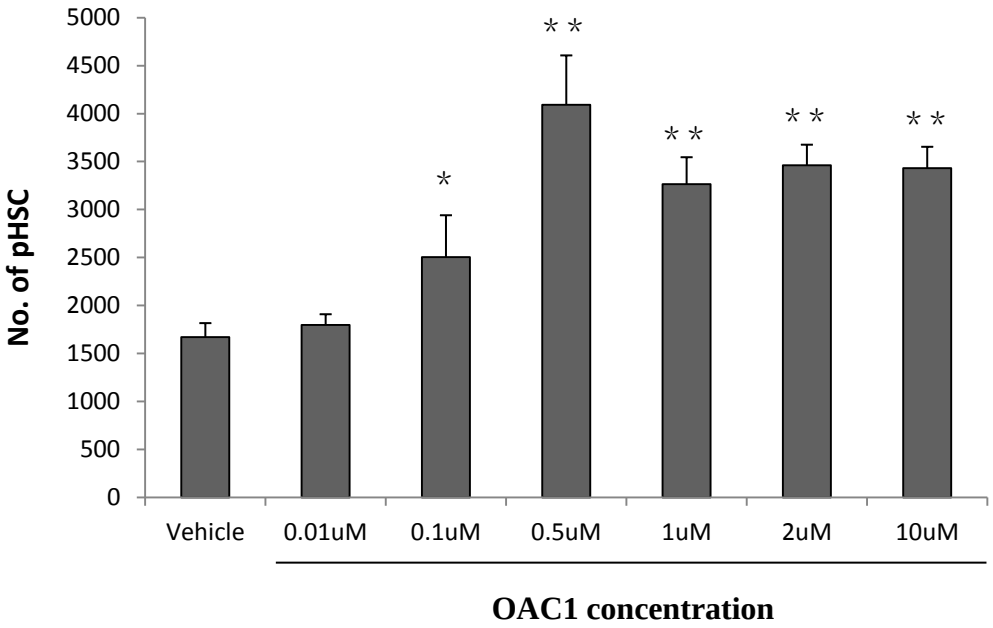
Supplemental Figure 3. The number of $Lin^-CD34^+CD38^-CD45RA^-CD90^+CD49f^+$ cells significantly increased in OAC1-treated group compared to vehicle-treated group while *ex vivo* culturing in both: (A) serum containing medium and (B) serum-free medium Stemline II. n=3, ** indicates $p<0.01$. (C) The number of phenotypically-defined endothelial progenitor cells (EPC, $CD133^+CD309^+CD34^+$) significantly increased in OAC1-treated group compared to vehicle-treated group at Day 4. n=3, * indicates $p<0.05$, ** indicates $p<0.01$. (D) The number of phenotypically-defined mesenchymal stromal cells (MSC, $CD45^-CD73^+CD105^+CD90^+$) did not show significant differences in OAC1-treated group compared to vehicle-treated group at Day 4. n=3, N.S. indicates $p>0.05$.

Supplemental Figure 4. (A) CFU numbers in 1000 cells of the progeny of an equivalent number of $CD34^+$ cells that were transfected with *HOXB4, OCT4* or scrambled (negative control) siRNA and expanded in the presence of vehicle control or OAC1 for 4 days. N.S. indicates $p>0.05$, ** indicates $p<0.01$. (B) Binding of OCT4 to the *HOXB4* promoter. The recruitment of OCT4 in the *HOXB4* promoter was assessed by ChIP analysis. CB $CD34^+$ cells were harvested and fixed, soluble chromatin was immunoprecipitated using anti-OCT4 or control Ab (normal mouse IgG). *HOXB4* promoter fragments were amplified by PCR. The primers used to amplify the -3000bp *HOXB4* promoter region were 5'- gtgtgagttcagcctgtctgg-3' and 5'- cctaggtctgagaaatacttgc -3'.

Supplemental Figure 5. Kaplan-Meier survival curves of NSG mice transplanted with human cord blood $CD34^+$ cells treated with vehicle control (n=16) or OAC1 (n=16). N.S. indicates $p>0.05$.

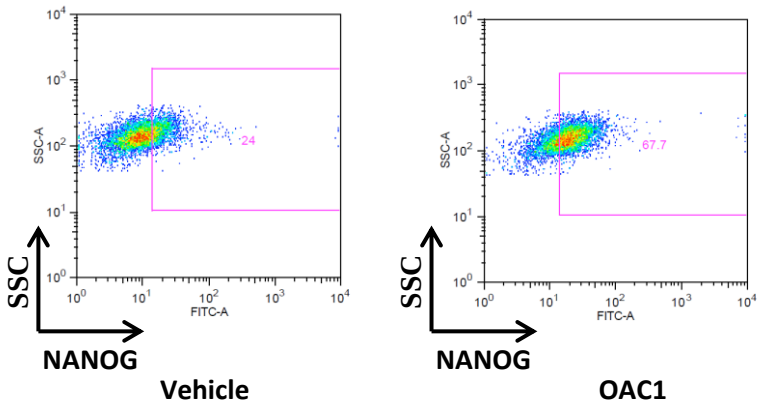
Supplemental Figure 6. Teratoma formation by H9 ES cells. $CD34^+$ cells from vehicle control cultures, OAC1 treatment cultures or human H9 ES cells were each injected subcutaneously into nude mice and were examined after 6 weeks. (A) Only H9 ES cells form teratomas in NSG mice (n=2). Teratomas were not observed in animals injected with $CD34^+$ cells from vehicle control cultures (n=2) or OAC1 treatment cultures (n=3). (B) The tissues representing all 3 embryonic germ layers, including gut epithelium (endoderm), cartilage (mesoderm), and secretory epithelium (ectoderm) in teratoma were shown.

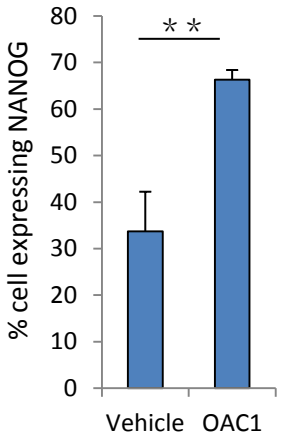
A



Supplemental Figure 1

A





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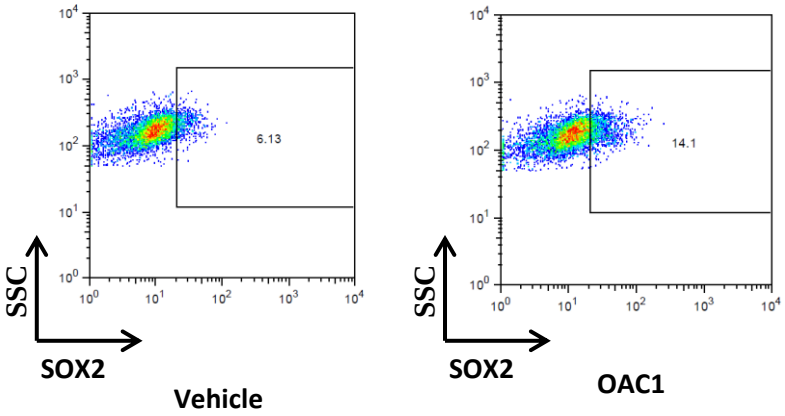

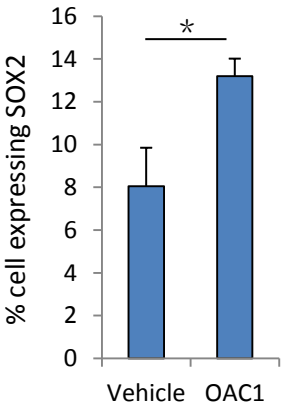

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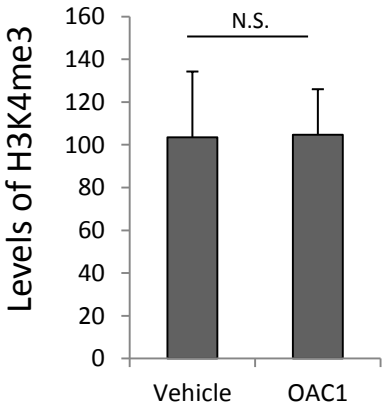

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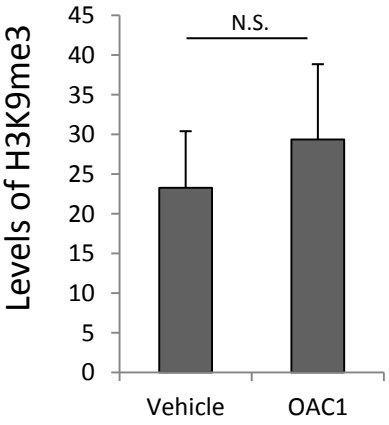
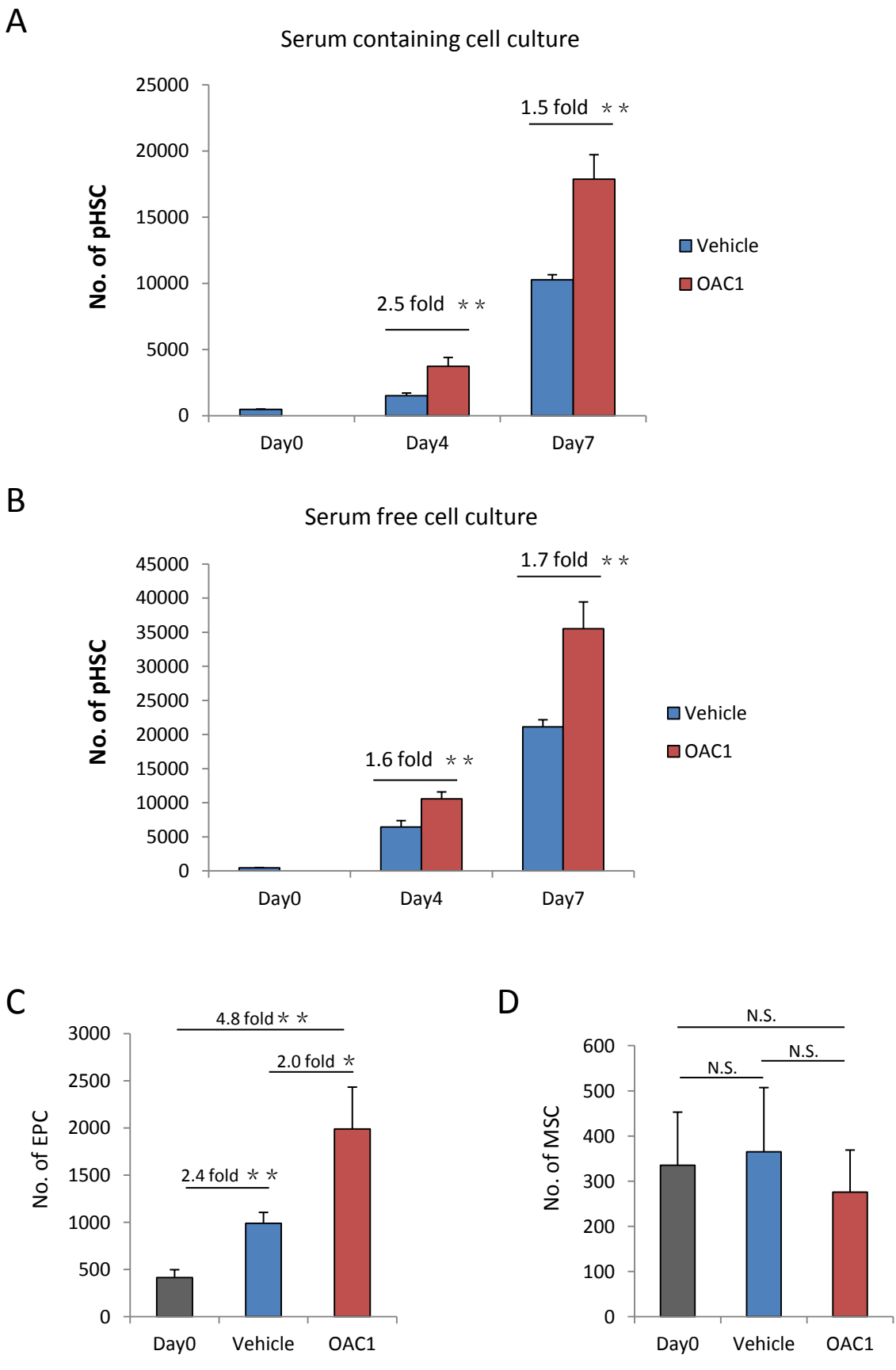
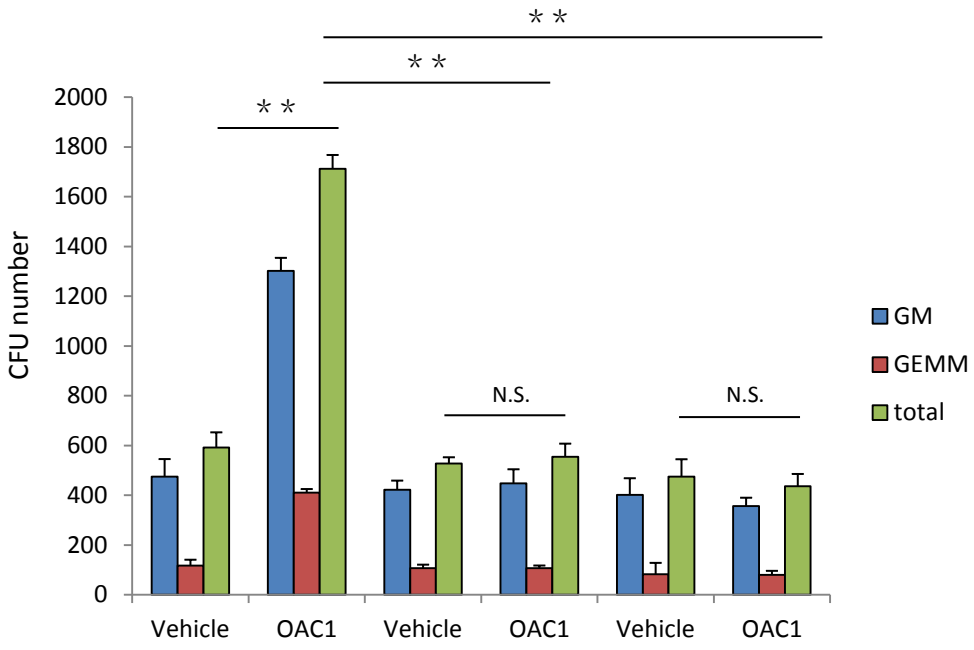


Supplemental Figure 2



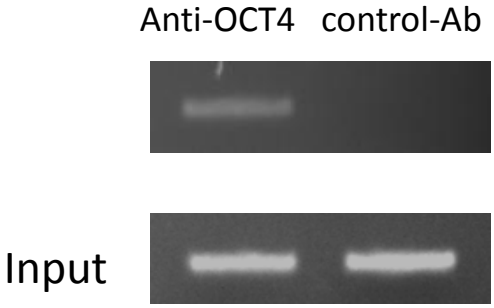
Supplemental Figure 3

A



scrambled control	+	+	-	-	-	-
HOXB4 siRNA	-	-	+	+	-	-
OCT4 siRNA	-	-	-	-	+	+

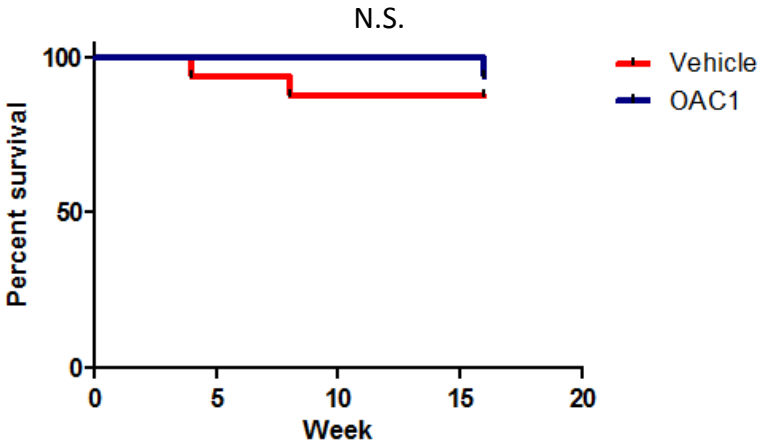
B



CB CD34^{+} cells

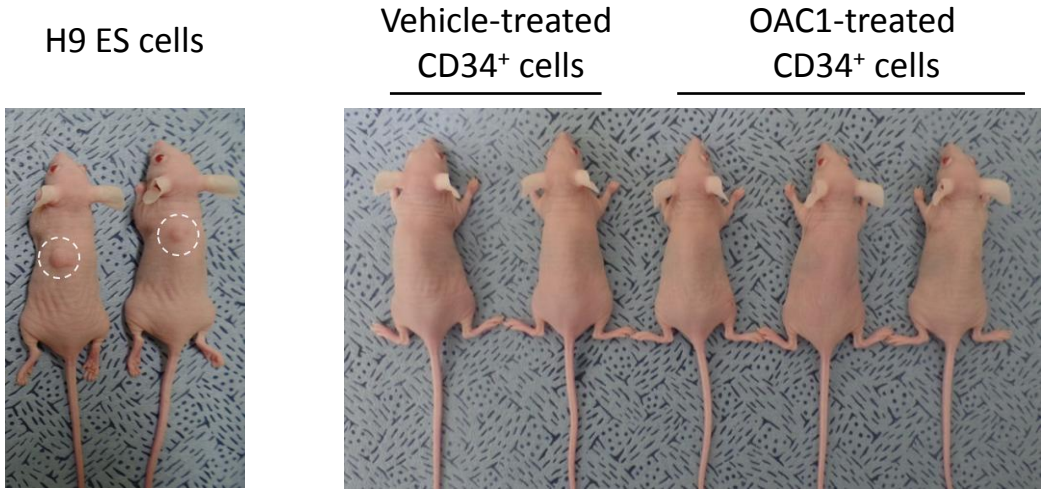
Supplemental Figure 4

A



Supplemental Figure 5

A



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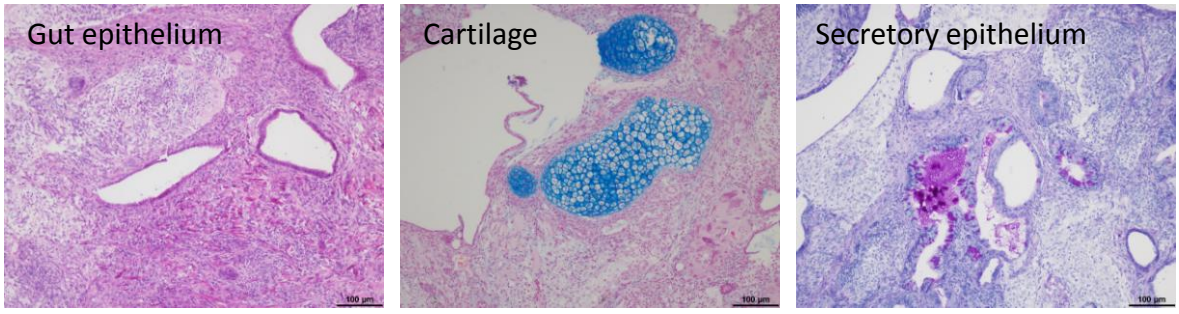

Supplemental Figure 6