Online Supplement Figure Legends

Online Figure I: FACS Analysis of Cellular Markers in Non-Modified ($CD34^{NM}$), or Modified CD34+ Cells. Modified ($CD34^{Shh}$ and $CD34^{EV}$) and naïve cells ($CD34^{NM}$) were subjected to cell antigen analysis via FACS to determine whether the modification procedure was altering the short-term capacity of CD34+ cells to maintain expression of their stem cell antigens. Shown are representative examples of cultured $CD34^{NM}$, $CD34^{EV}$ and $CD34^{Shh}$ showing no change in the populational proportions of cells that express various stem cell and lineage markers at 24 hours post-modification. These images represent one of three independent experiments, all of which revealed similar findings.

Online Figure II: Validation of the sub-therapeutic $CD34^{+}$ cell dose threshold. A. When intra-myocardially injected with $2.5x10^4$ $CD34^{NM}$, mice fail to display improvements in ejection fraction and fractional shortening as compared to saline treated mice. Conversely, mice injected with $5.0x10^4$ $CD34^{NM}$ cells do show protection against losses in function at 4 weeks post-AMI. Both infarct size (depicted in **B**) and capillary density (depicted in **C**) are also not influenced by the sub-threshold $2.5x10^4$ $CD34^{NM}$ dose. Bars on all graphs represent the group means ± SE. * represents $p<0.05$ assessed with a one-way ANOVA and the post-hoc Holm-Sidak test.

Online Figure III: $CD34^{Shh}$ Produce Shh-containing Exosomes that then Physically Transfer Shh to Other Cell Types and Promote Shh Signaling. A. Treatment of

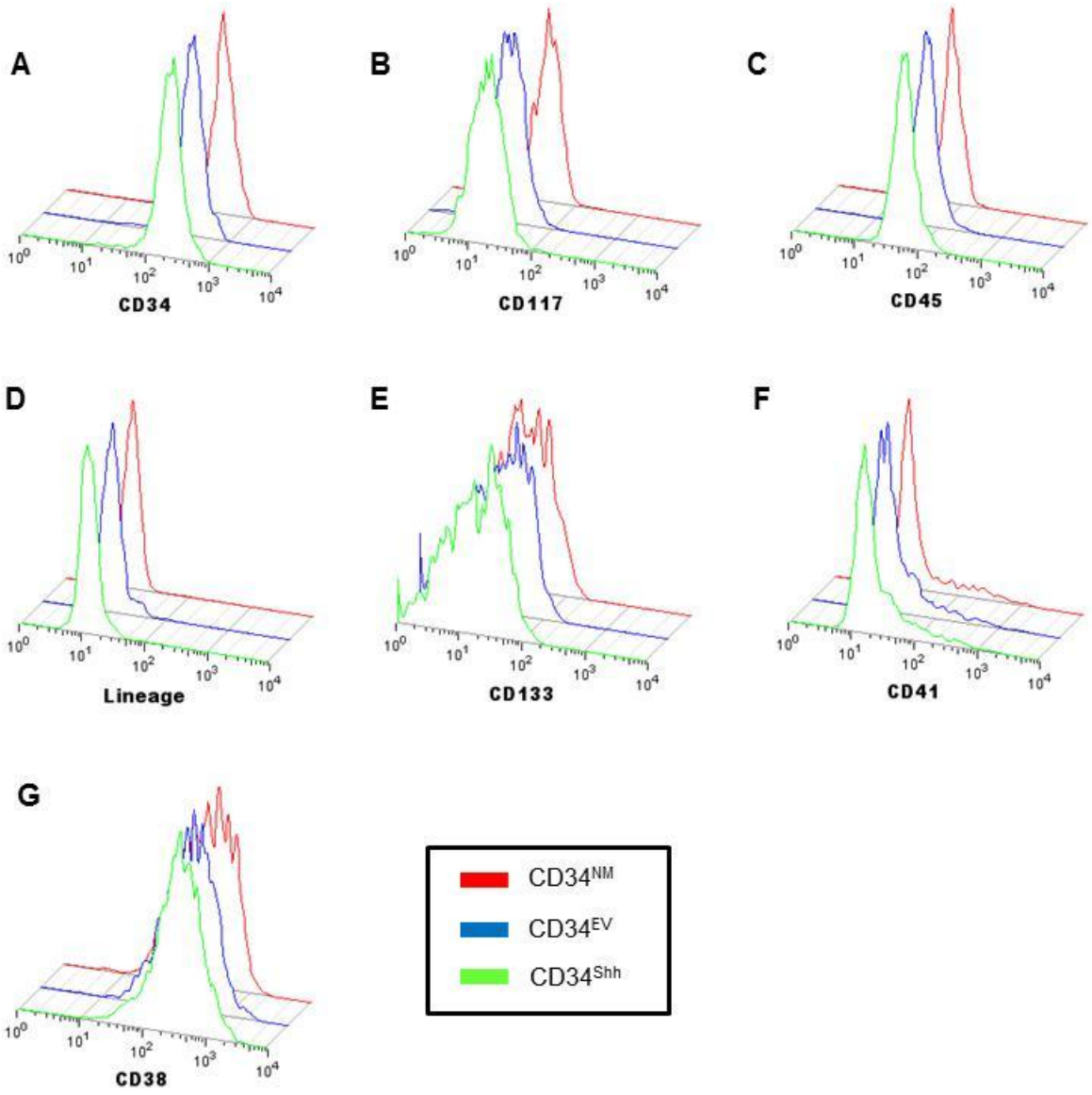
HUVECs with exosomes derived from $CD34^{Shh}$ ($CD34^{Shh}$ Ex) for 16 hours results in Shh protein transfer into HUVECS as assessed by Shh ELISA. **B.** Treatment of NIH3T3 cells (previously transfected with Gli-luciferase and β-galactosidase vectors) with exosomes derived from $CD34^{Shh}$ ($CD34^{Shh}$ Ex) for 16 hours results in enhanced induction of luciferase activity as compared to cells treated with exosomes from $CD34^{EV}$. Bars for both **A** and **B** depict replicate means ± SEM and are representative examples of at least 2 independent experiments.

Online Table I

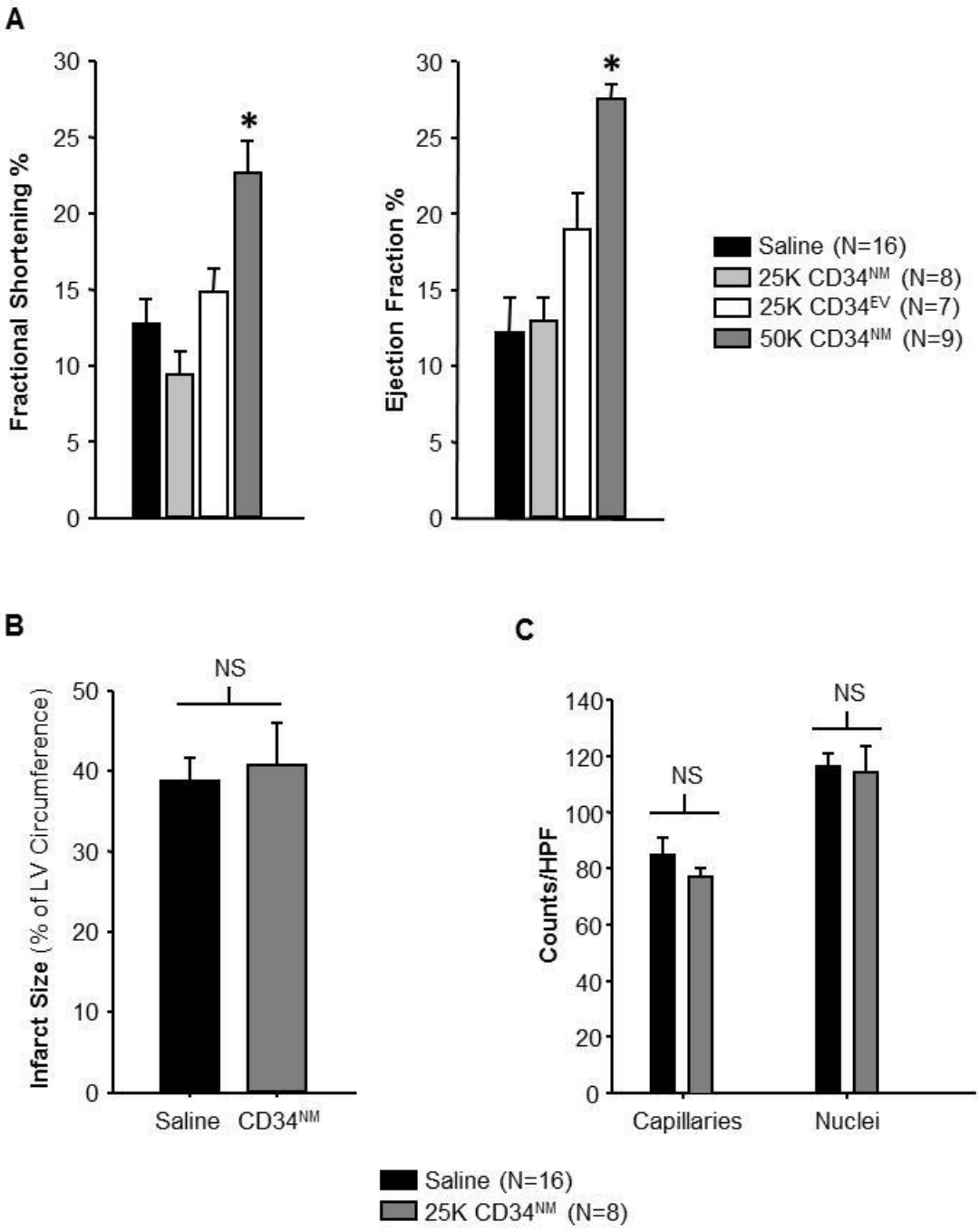
Human Primer and Probe Sequences for Real Time Quantitative RT-PCR

Gene	Forward Primer	Reverse Primer	Probe
Shh	CGGCTTCGACTGGGTGTACT	GCAGCCTCCCGATTTGG	CTCAGAGGTGTAAGGAC
Smo	CCTGTTTGCCATGTTTGGAA	CCAGGTACGCCTCCAGATGA	TGGCATCGCCATGAGCACCTG
Ptc1	CTGCCCACCAAGTGATCGT	GATTCGGGATGGACCACAGT	AAGCCACAGAAAACCCCGTCTTCGC
Gli1	TCGGGCACCATCCATTTCTA	TCAGTCTGCTTTCCTCCCTGAT	CCTTCCCGCTCCCTCTTGGGCT
18S	ACGAGACTCTGGCATGCTAACTAGT	CGCCACTTGTCCCTCTAAGAA	ACGCGACCCCCGAGCGGT

Online Figure I



Online Figure II



Online Figure III