

# PNAS

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Supplementary Information for

**Efficient and non-toxic biomolecule delivery to primary human hematopoietic stem cells using nanostraws**

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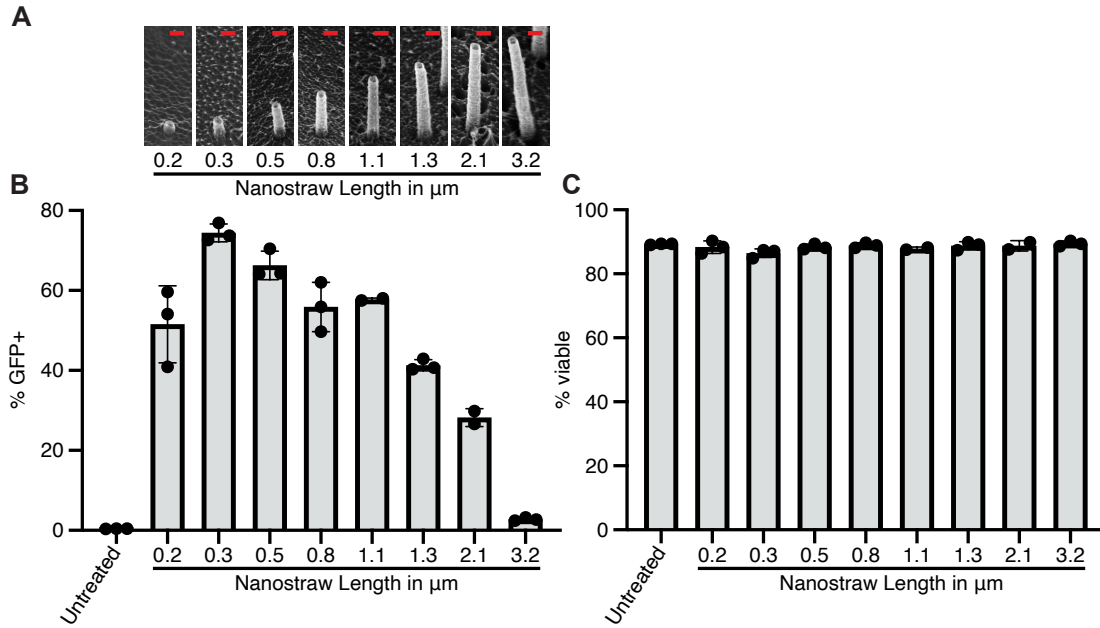
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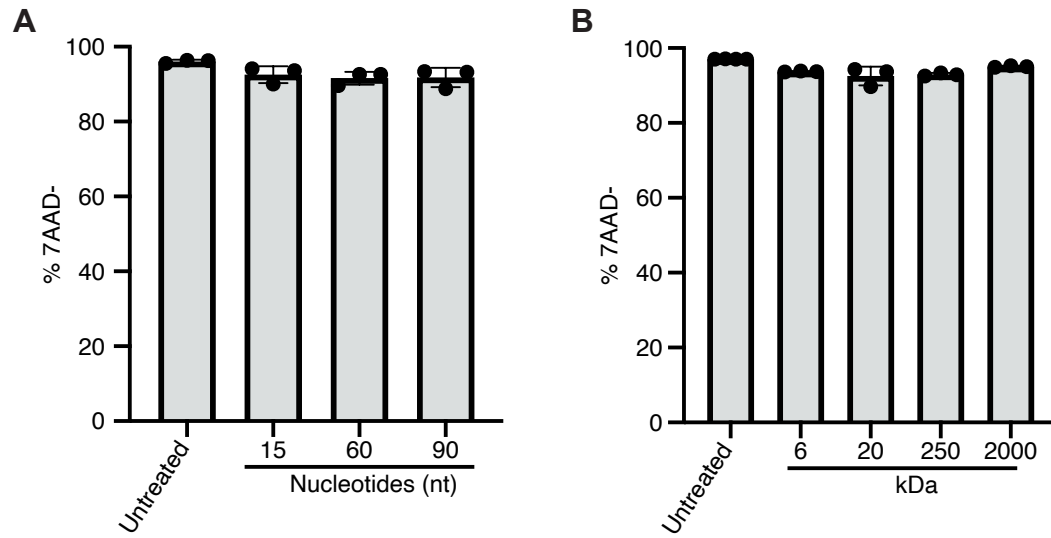
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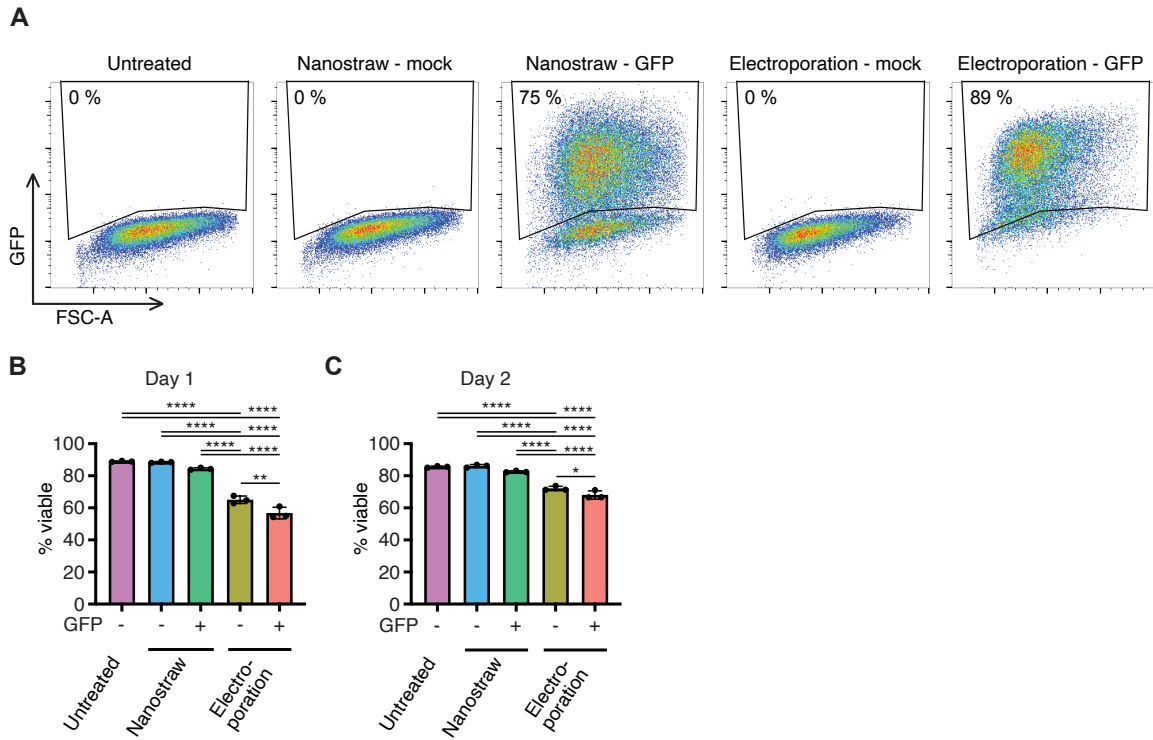
Figures S1 to S4



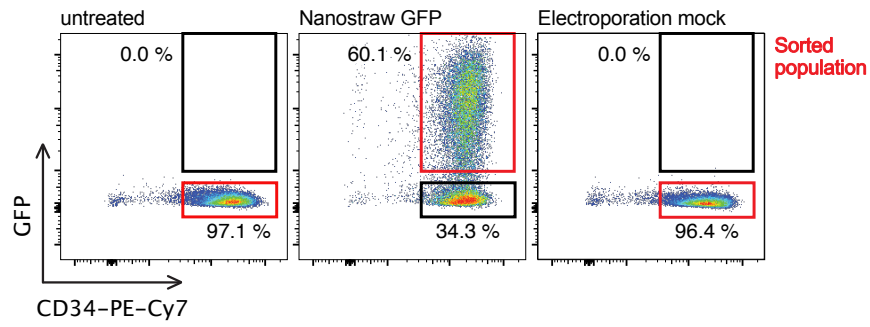
**Figure S1.** Effect of nanostraw length and cargo size on delivery efficiency. (A) 30° tilted view SEM images of nanostraws of different lengths. Scalebars denote 200 nm. (B) Percentage of GFP+ and (C) viability (7AAD- & Annexin V-) of HSPCs 1 day after mRNA delivery using differently sized nanostraw (n = 2-3).



**Figure S2.** Percentage of live (7AAD-) HSPCs immediately after they were subjected to CeNT mediated delivery of (A) DNA oligonucleotides and (B) dextrans of different sizes (n = 3).



**Figure S3.** (A) Representative FACS plots of live CD34<sup>+</sup> cells treated with different mRNA or mock conditions. (B) Percentage of viable (7AAD<sup>-</sup> and Annexin V<sup>-</sup>) HSPCs at 1 day and (C) 2 days after CeNT treatment or conventional electroporation (n = 3; \**P* < 0.05, \*\**P* < 0.005, \*\*\*\**P* < 0.00005).



**Figure S4.** Representative FACS plots showing the populations (CD34<sup>+</sup>GFP<sup>+</sup> or CD34<sup>+</sup>GFP<sup>-</sup>) that were sorted for the transplantation experiment. The gates of the sorted populations are highlighted in red.