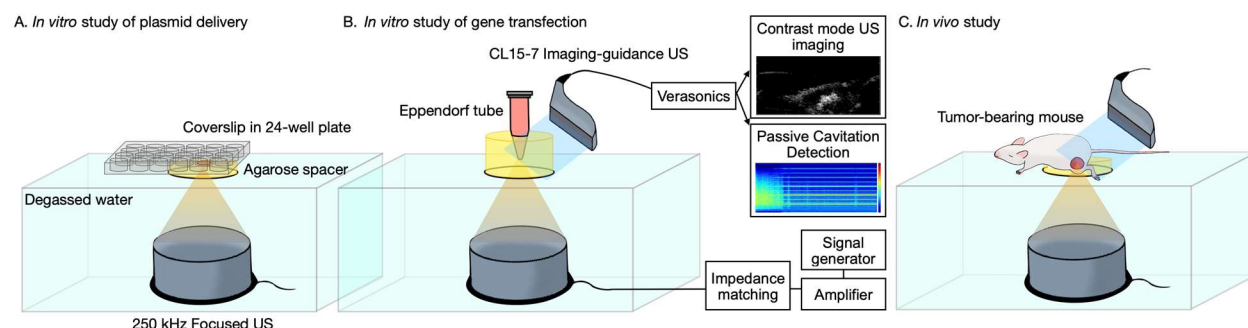


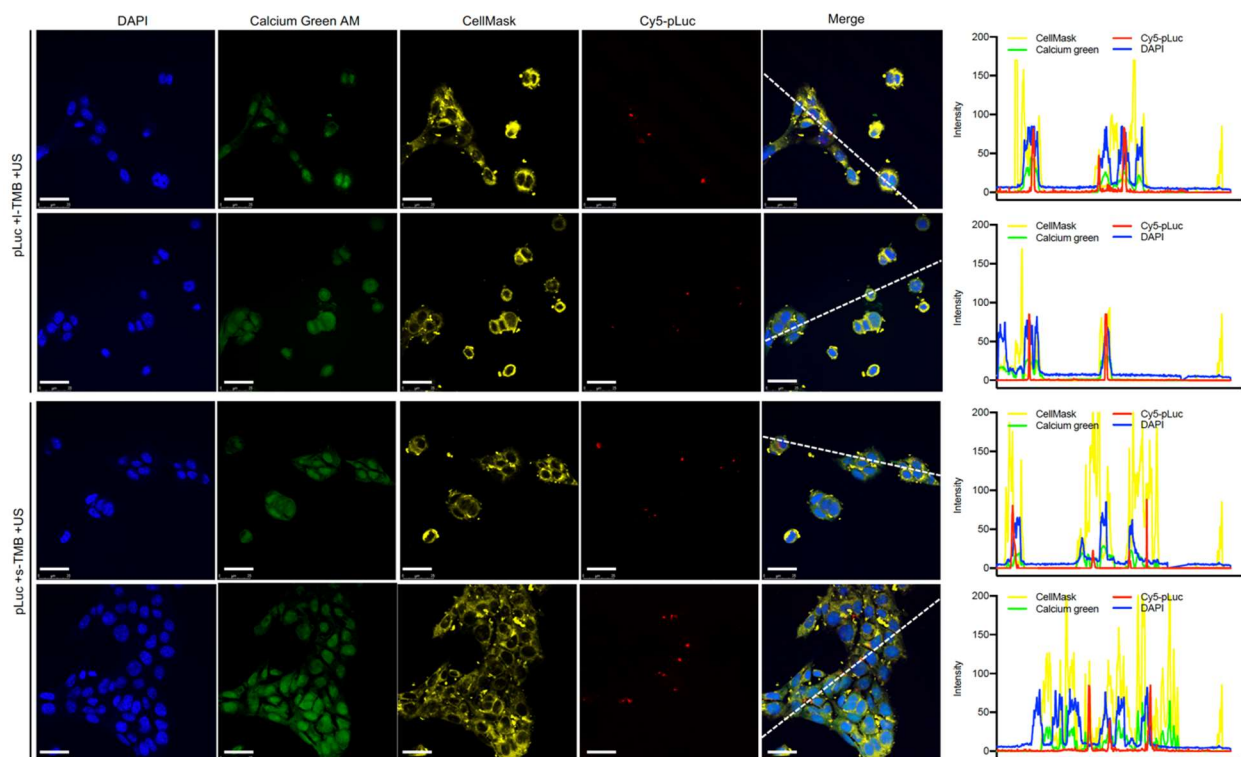
## Supporting information

**Table S1.** Summary of microbubble size distributions.

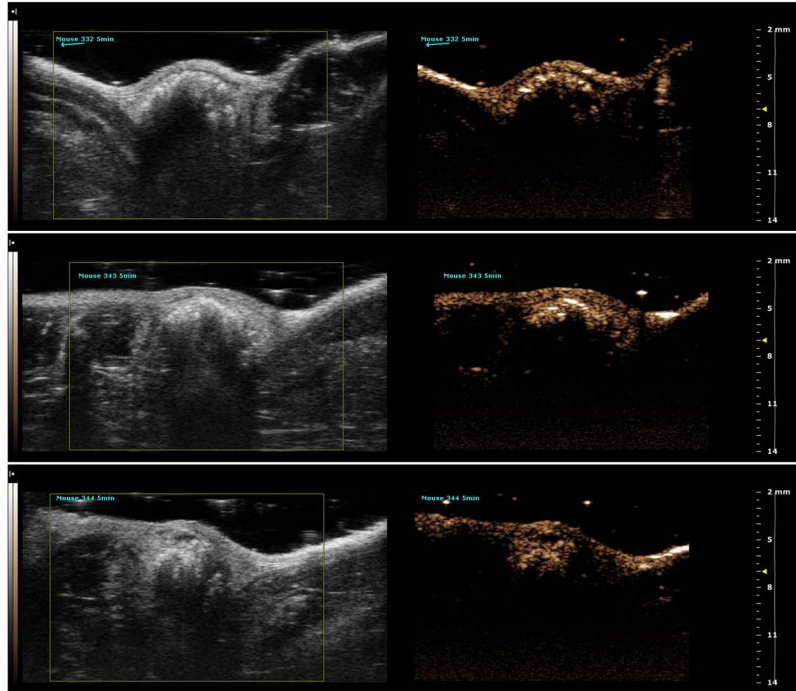
	Concentration (#/mL)	Diameter, mean ( $\mu\text{m}$ )	Diameter, median ( $\mu\text{m}$ )
<b>Initial</b>	$2.42 \times 10^{10}$	$2.56 \pm 1.72$	1.98
<b>s-TMB</b>	$1.57 \times 10^{10}$	$1.27 \pm 0.89$	1.29
<b>I-TMB</b>	$8.91 \times 10^9$	$4.23 \pm 2.27$	3.58



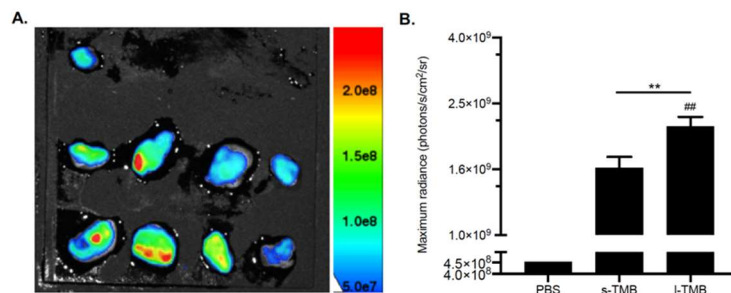
**Figure S1.** Schematic illustration of the custom-made experimental system for A) *in vitro* study of plasmid delivery, B) *in vitro* study of gene delivery, and C) *in vivo* study.



**Figure S2.** Confocal laser microscopy images of cellular distribution of Cy5-pLuc after sonoporation with I-TMBs and s-TMBs, and fluorescence intensities for each channel were quantified based on the dashed line in the microscopic images. Scale bars: 25  $\mu\text{m}$ .

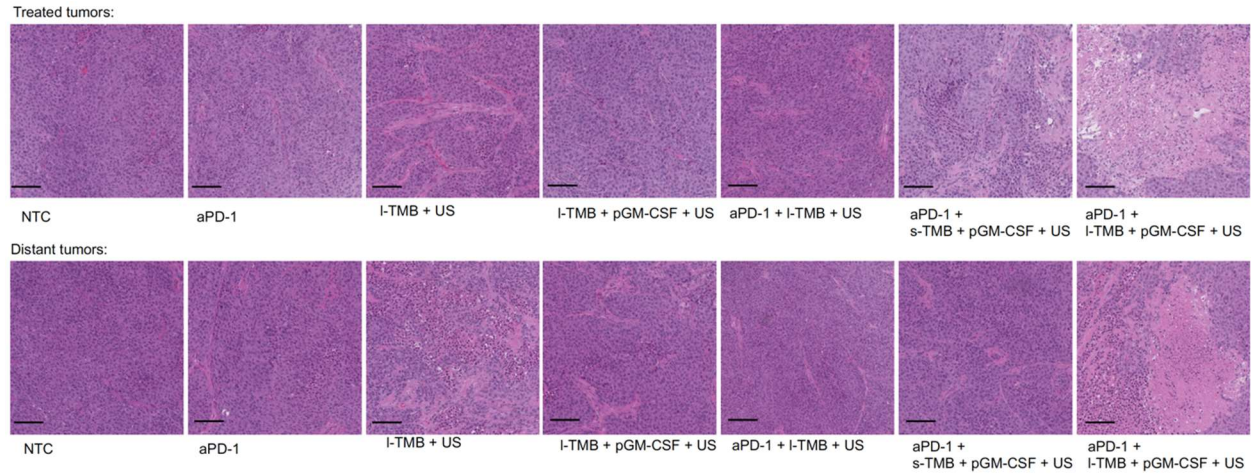


**Figure S3.** Ultrasound imaging of tumors in B mode and contrast mode. Following i.t. injection, the images showed wide tumor distribution of TMBs at 5 min.

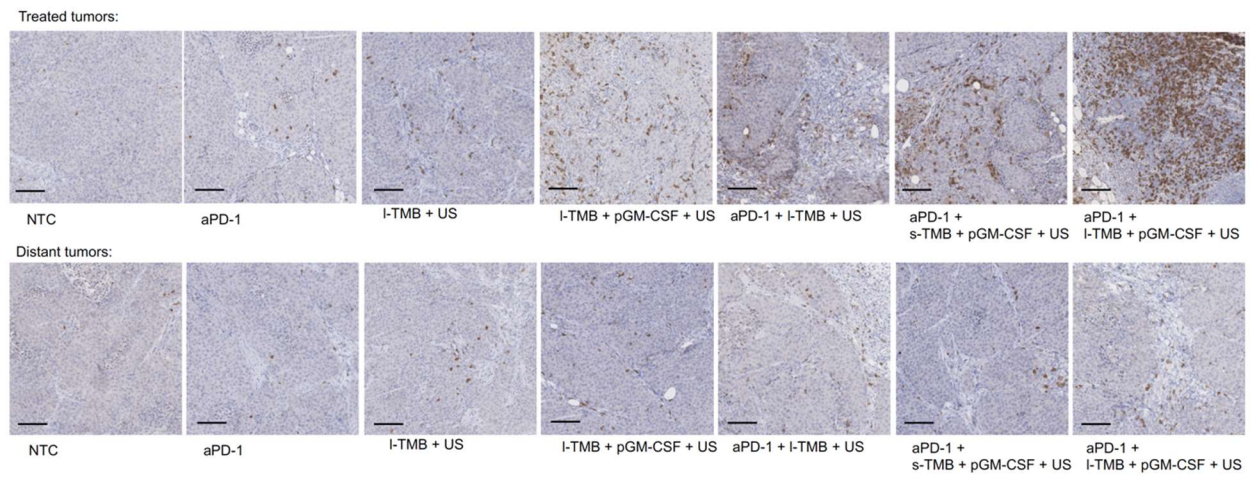


**Figure S4.** A) Ex vivo imaging of the dissected tumors after pGFP transfection and B) quantification of the fluorescence signals in tumors after 24 h. \*\*P < 0.01 and ##P < 0.01 vs. NTC. All data are plotted as mean ± SD.

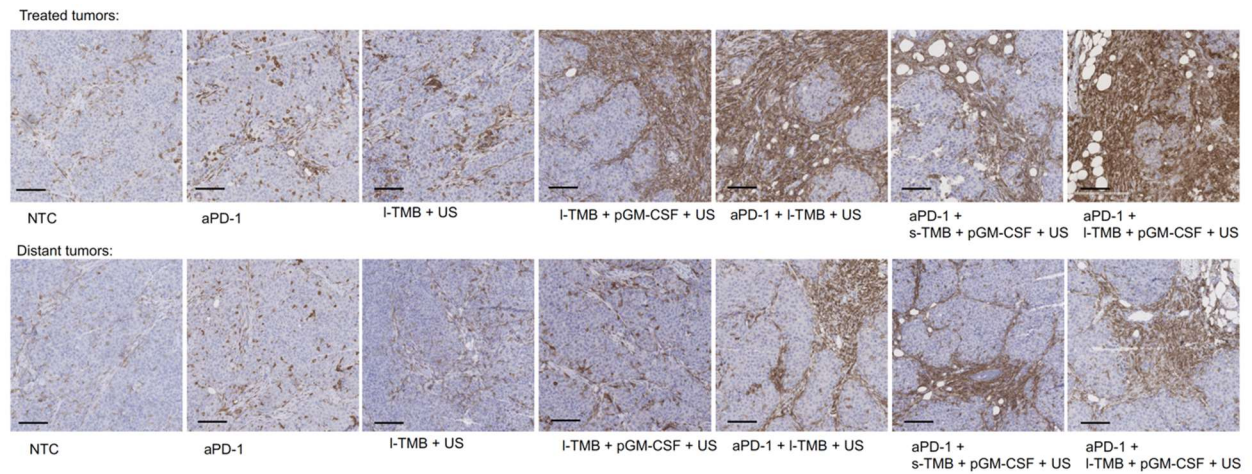




**Figure S5.** H&E staining of treated and distant tumors (Scale bar: 100  $\mu$ m).

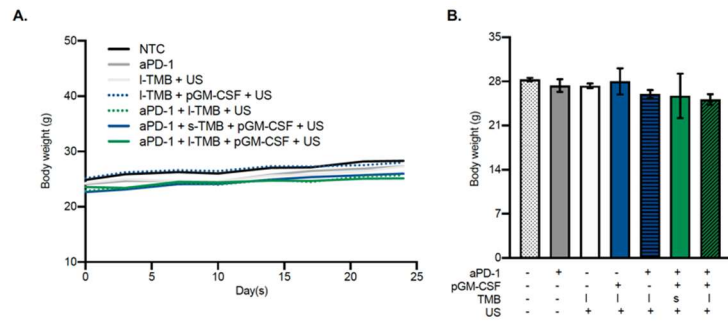


**Figure S6.** IHC staining of CD8 in treated and distant tumors (Scale bar: 100  $\mu$ m).

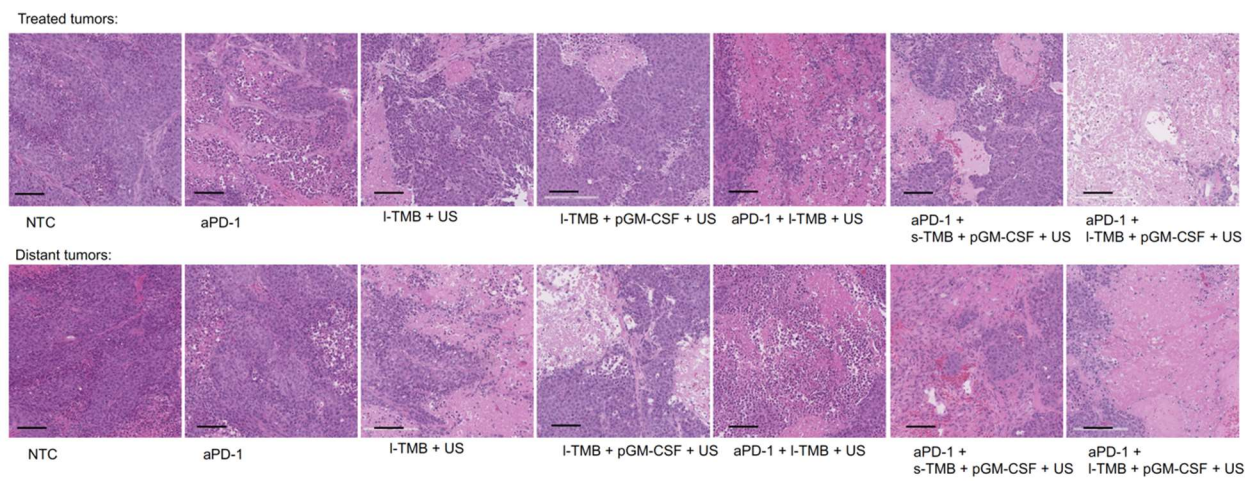


**Figure S7.** IHC staining of F4/80 in treated and distant tumors showing the macrophage infiltration (Scale bar: 100  $\mu$ m).

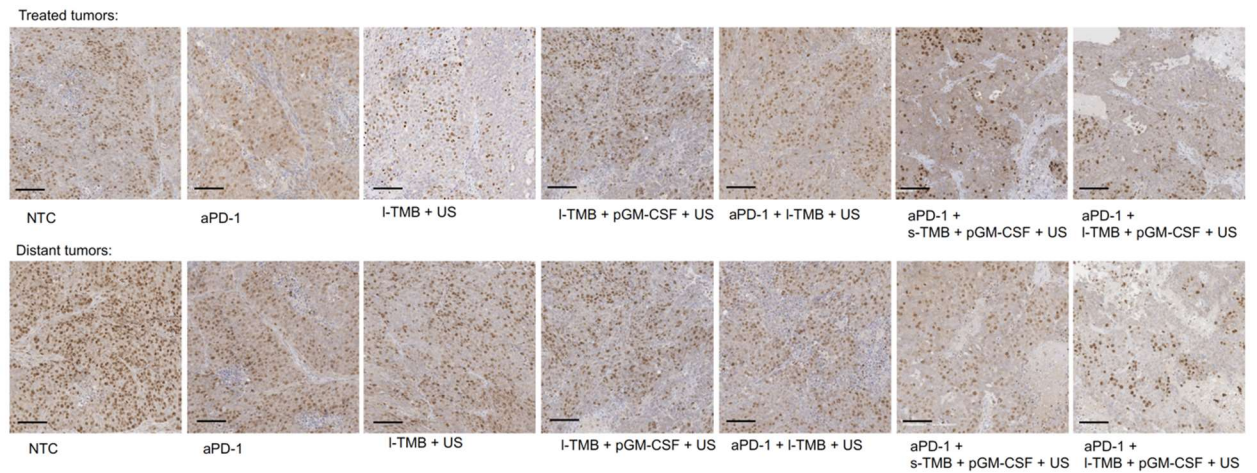




**Figure S8.** A) Body weight of mice during treatment. D) Comparison of the body weight on Day 25.



**Figure S9.** H&E staining of treated and distant tumors (Scale bar: 100  $\mu$ m).



**Figure S10.** IHC staining of Ki67 in treated and distant tumors (Scale bar: 100  $\mu$ m).