Supporting Information

The Use of pH-sensitive Functional Selenium Nanoparticles Shows Enhanced in vivo VEGF-siRNA Silencing and Fluorescence Imaging

Qianqian Yu,[a,1] Yanan Liu,[a,b,1] Chengwen Cao,[a] Fangling Le,[a] Xiuying Qin,[a] Dongdong Sun,[a] and Jie Liu.[a,*]

[a]*Department of Chemistry, Jinan University, Guangzhou 510632, China*
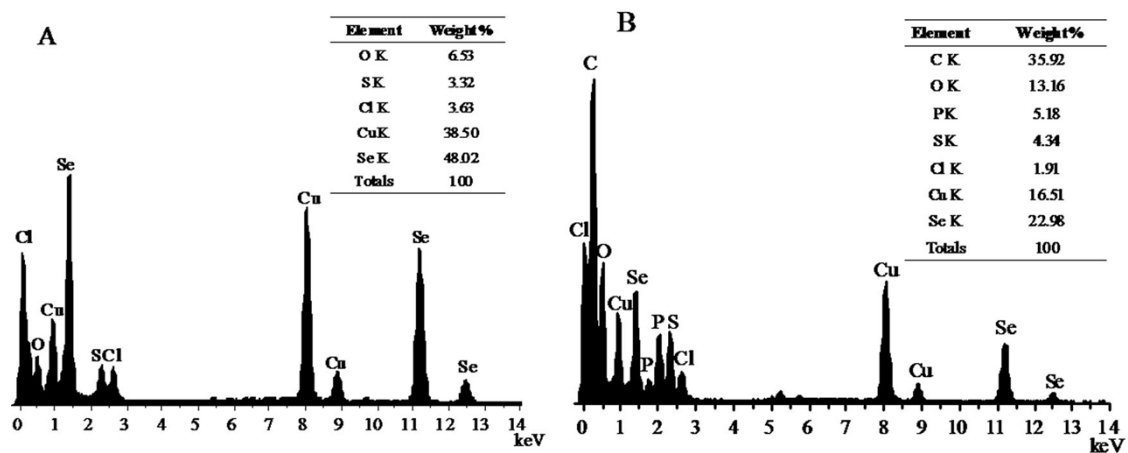[b]*Department ABCT, The Hong Kong Polytechnic University, Hong Kong*

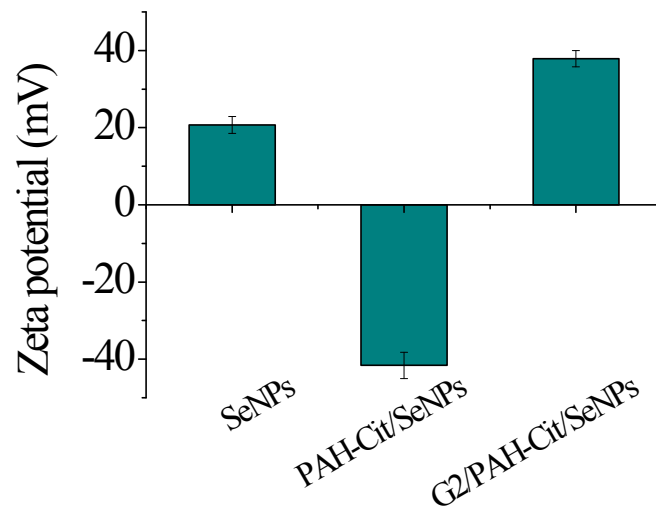**Fig.S1.** EDX analysis of SeNPs (A) and G2/PAH-Cit/SeNPs@siRNA (B).

Fig.S2. Zeta-potential of SeNPs, PAH-Cit/SeNPs and G2/PAH-Cit/SeNPs in 10 mM pH 7.4 HEPES buffer.
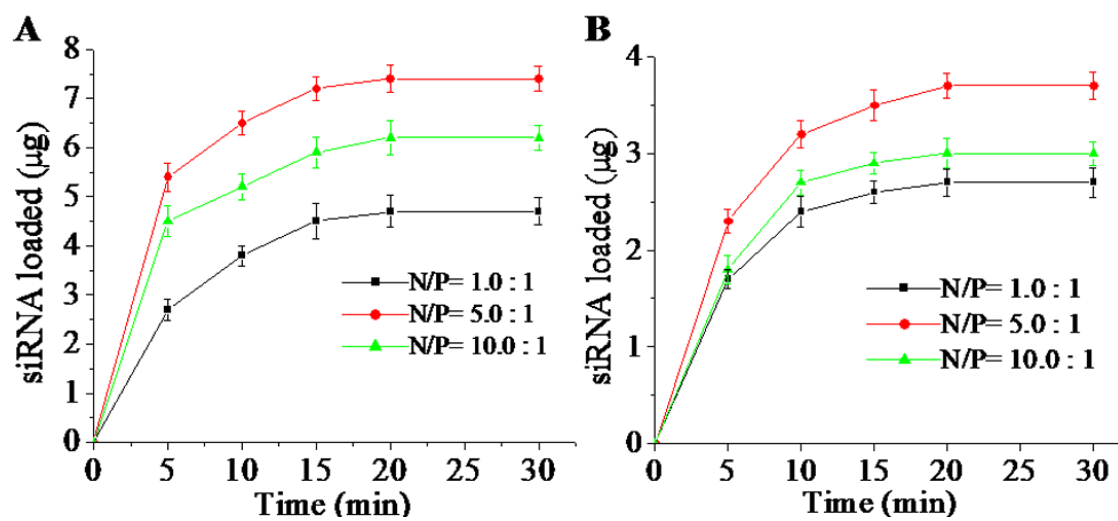
Fig.S3. Loading quantity of siRNA onto G2/PAH-Cit/SeNPs (A) and SeNPs (B) with different N/P ratio.
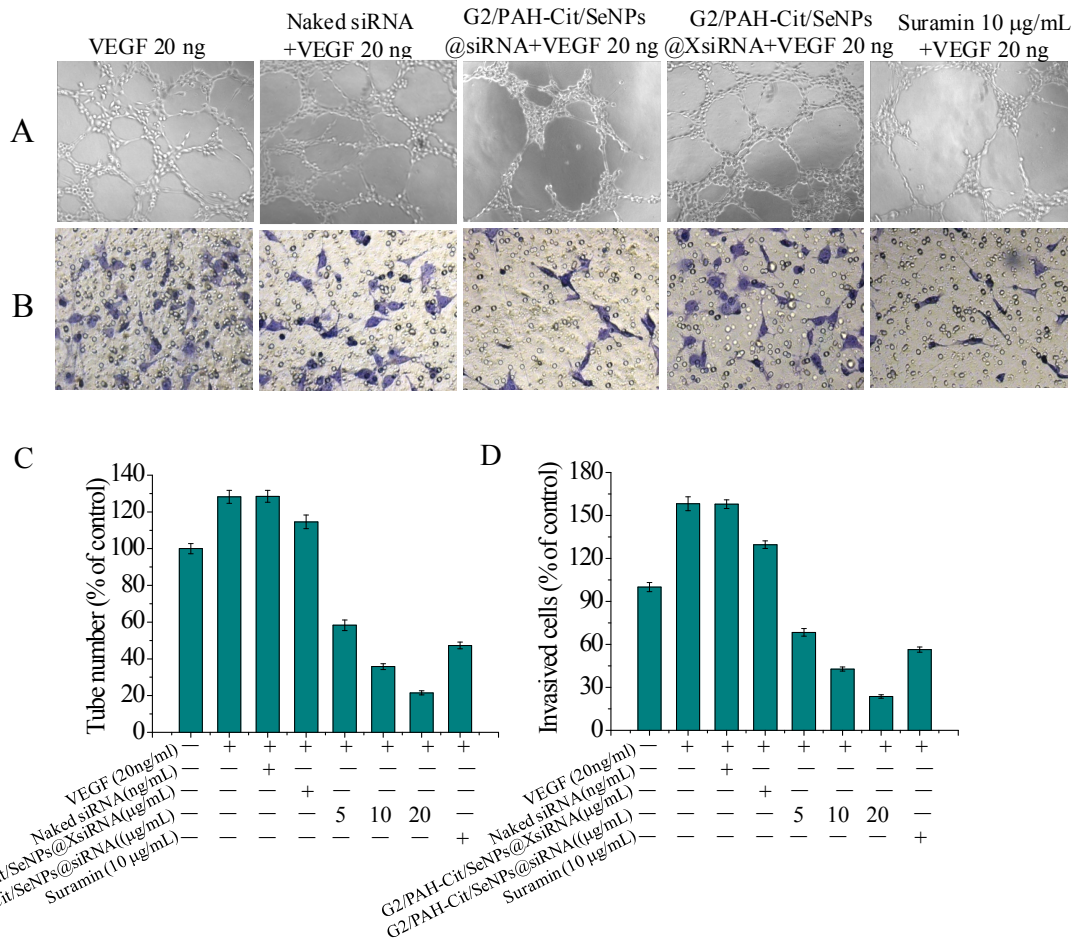
Fig.S4. Delivery systems inhibit tube formation of HUVECs and VEGF-induced invasion. (A and C). 0.5 μg/mL naked siRNA or 5 μg/mL delivery systems inhibited the VEGF-induced tube formation of endothelial cells in Matrigel. After incubation, endothelial cells were fixed, and tubular structures were photographed (magnification, ×100). (B and D). 0.5 μg/mL naked siRNA or 5 μg/mL delivery systems inhibited HUVEC invasion. Migrated cells through the membrane were quantified in the Transwell assays. These experiments were performed thrice with similar results and significant differences from the control group were observed. Data are presented as the percentages of the control group, which was set at 100%.
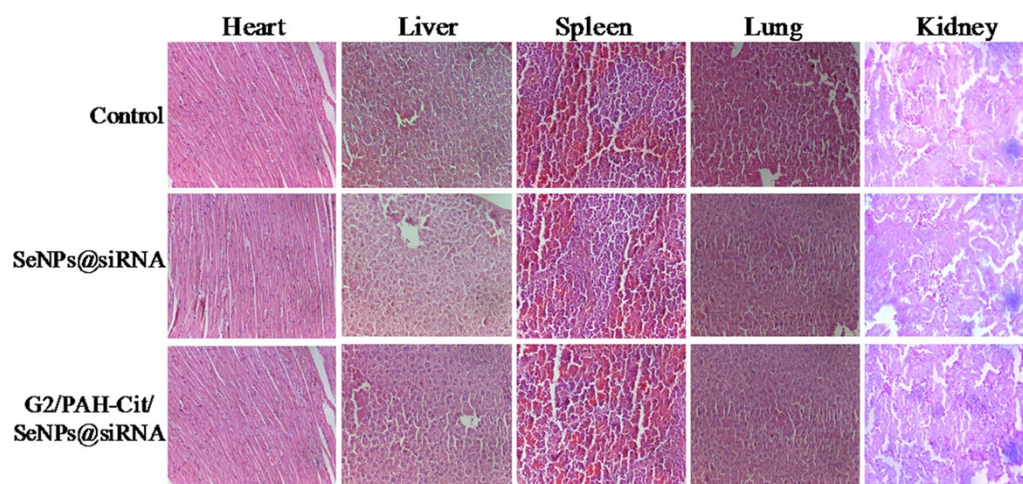
Fig.S5. H&E stained images of heart, liver, spleen, lung and kidney tissue slides with collected from SeNPs@siRNA or G2/PAH-Cit/SeNPs@siRNA injected mice and control treated mice with PBS. Scale bar = 50 μm.
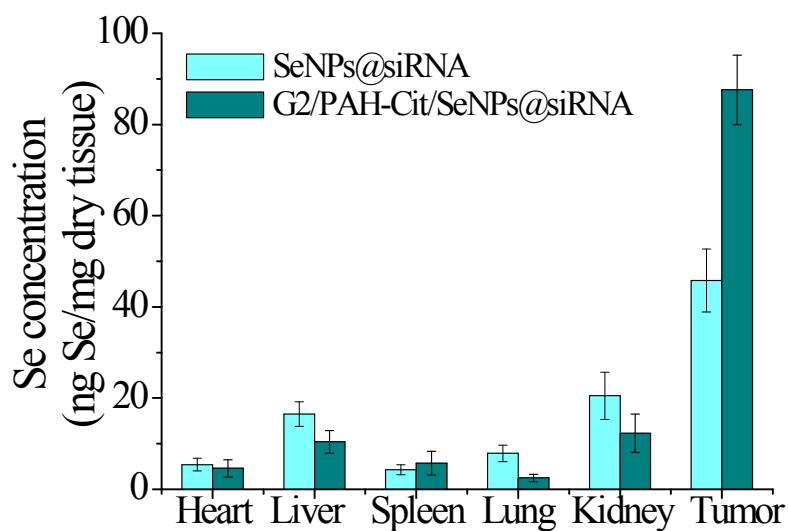
Fig.S6. Biodistribution of Se in mice treated with SeNPs@siRNA and G2/PAH-Cit/SeNPs@siRNA nanoparticles. Se concentrations are shown in heart, liver, spleen, lung, kidney, and tumor of nude mice bearing A549 tumors. The data are shown as mean.

Table S1. Characteristics of different nanoparticles prepared under optimal conditions.

NP	SeNPs	SeNPs@siRNA	G2/PAH-Cit/SeNPs	G2/PAH-Cit/SeNPs@siRNA
Particle size (nm)	74.5	87.4	102.8	111.5
Zpotential (mV)	20.2	18.2	25.3	15.4