

Figure S1.

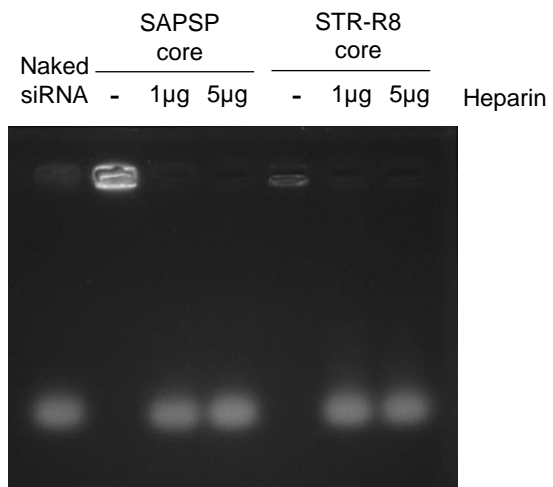


Figure S1. Evaluation of electrostatic interaction between siRNA and SAPSP or STR-R8. SAPSP core and STR-R8 core are treated with or without heparin for 10min. The reaction solution and naked siRNA were analyzed by 1% agarose gel electrophoresis in 50 mM citrate buffer solution (pH4.0). The siRNA was visualized by staining with SYBER GOLD.

Figure S2.

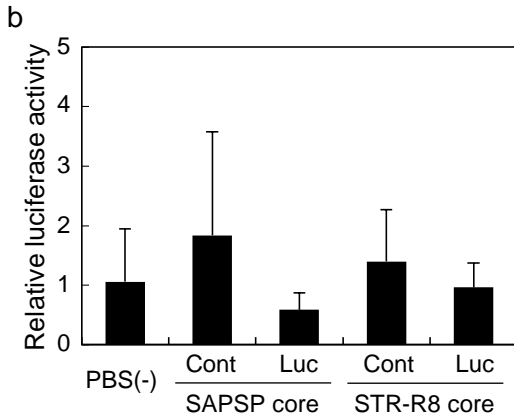
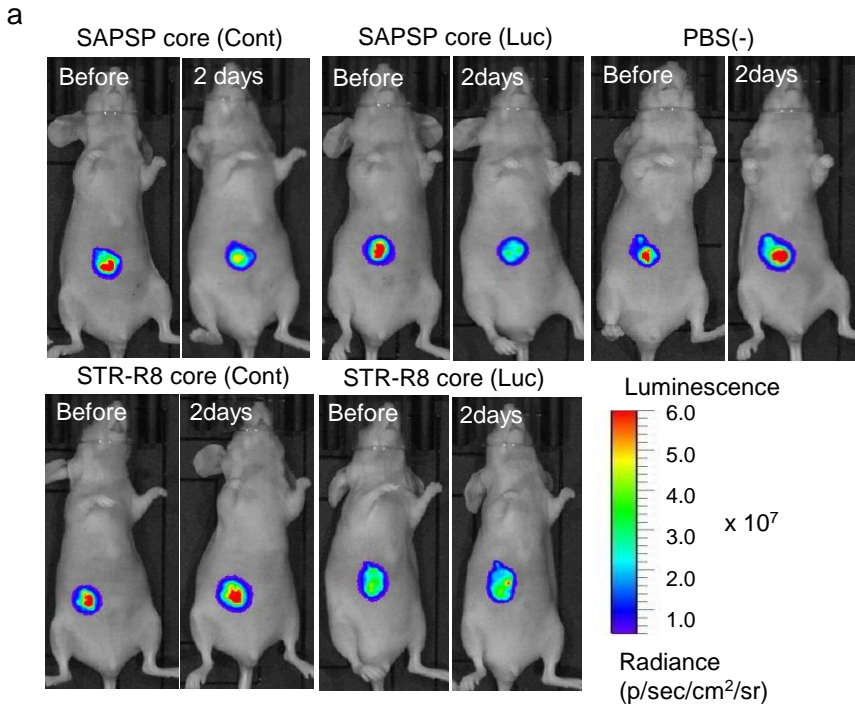


Figure S2. *In vivo* knockdown efficiency of R8-lipo encapsulating SAPSP cores following intravenous administration. R8-lipo encapsulating SAPSP or STR-R8 cores containing either negative control siRNA (Cont) or anti-luc siRNA (Luc) were administered to B16-F1-Luc cell-bearing mice via the intravenous route. The surface of the multilayer R8-lipo was modified with polyethylene glycol (PEG) for intravenous injection. Luciferase activities were measured with an IVIS Lumina XR imaging system before and 48 hr after injection, and the radiances were estimated using the Living Imaging software. The PBS (-)-administered mice were used as the negative control group. (a) Representative images of luciferase activity in mice administered the indicated samples. (b) Relative luciferase activities in the tumors of mice 48 hr after intravenous injection, compared with those prior to injection. Data are mean  $\pm$  S.D. n=4.

Movie S1. Time-lapse movie image of the siRNA release from SAPSP core.

Movie S2. Time-lapse movie image of the siRNA release from STR-R8 core.