Supporting Information

In-Depth Study on Gene Silencing Capability of Silica Nanoparticles with Different Pore Sizes: Degree and Duration of RNA Interference

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	Mean pore size (nm)	BET surface area (m^2/g)	Pore volume (mL/g)	Amine contents (mmol/g)	siRNA loading capacity (pmol/μg)
MSN2	2.1	1337	0.69	3.6	0.55
MSN4	4.3	630	0.72	3.3	0.8
MSN7	6.9	524	0.79	3.2	1.25
MSN10	10.5	586	0.82	3.1	1.25
MSN23	23	395	0.97	3.6	1.25

Table 1. Characterization of the porous silica nanoparticles by nitrogen adsorption experiment, elemental analysis and siRNA loading capacity of MSNs.

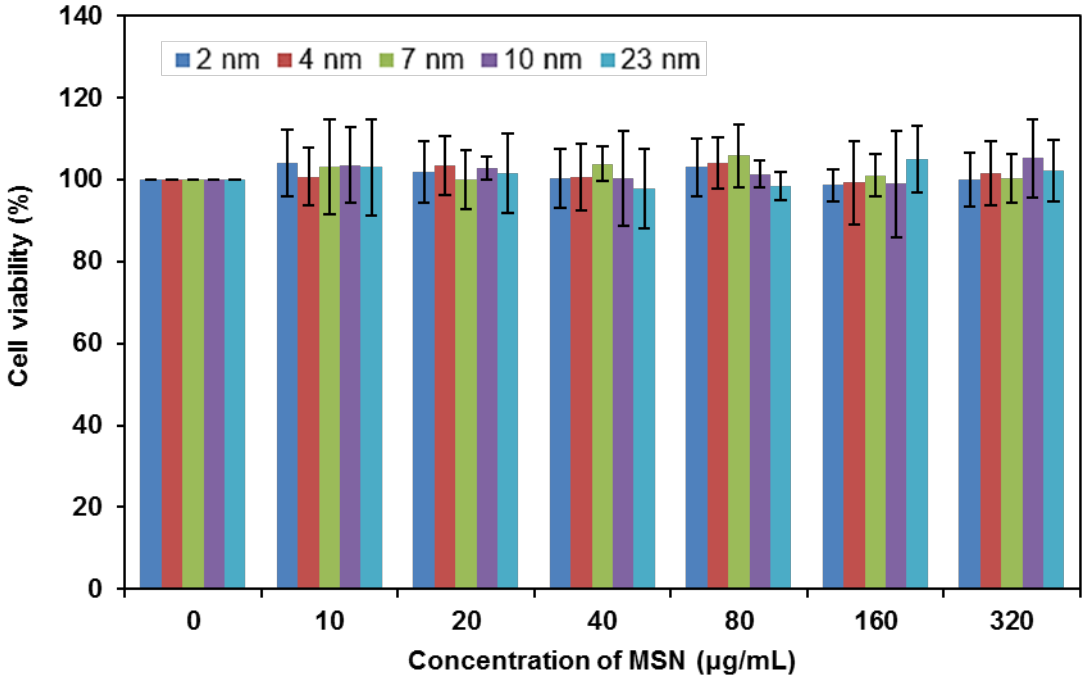

Figure S1. Cell viability assay was carried out after the treatment of MSNs possessing different pore sizes to HeLa cells.

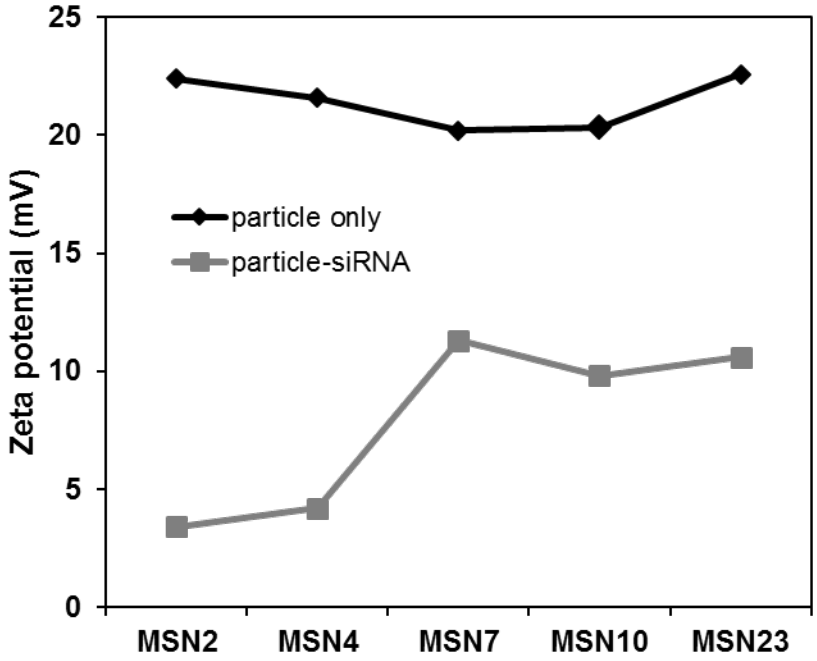

Figure S2. Zeta potentials before and after siRNA loading on each MSN. Dramatic decrease of zeta potential was observed in MSN2 and MSN4 after siRNA loading.

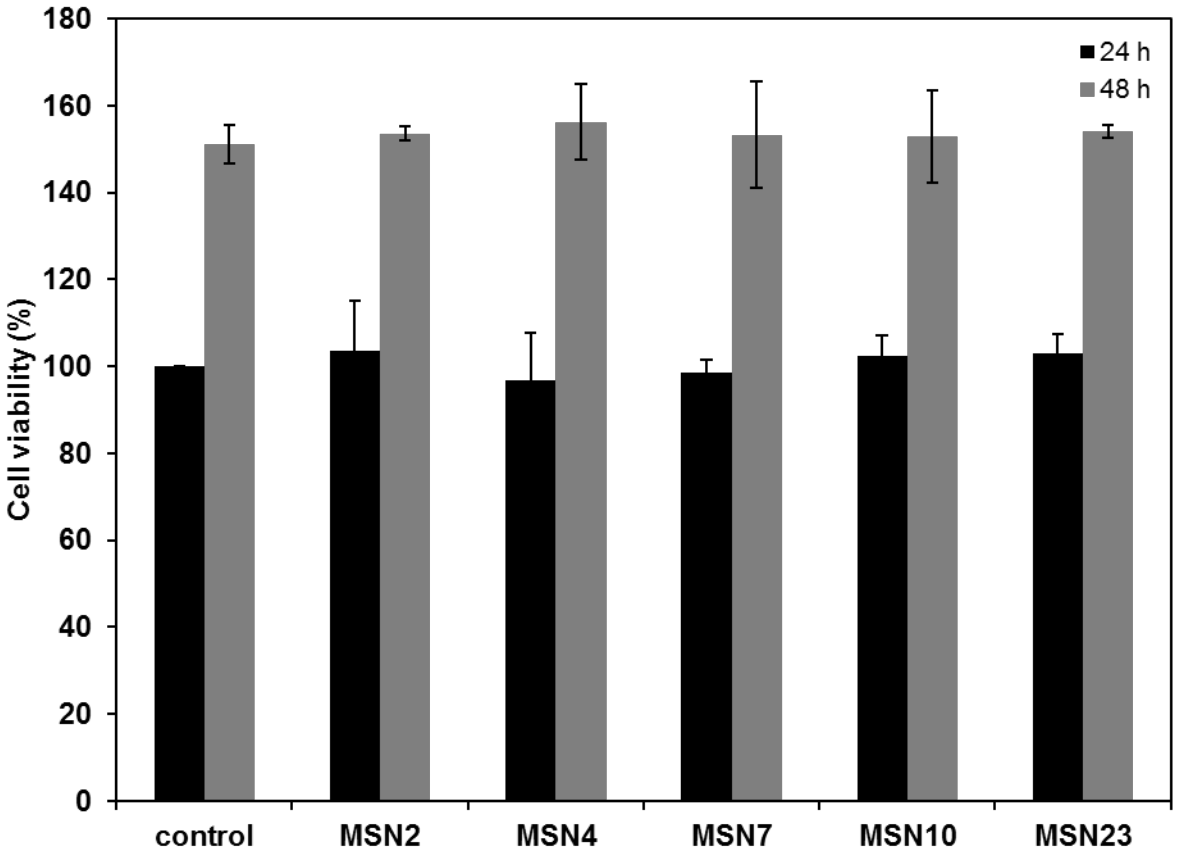

Figure S3. Cell viability assay was performed after the treatment of MSNs possessing various pore size for 24 and 48 h to HeLa cells using CCK-8 assay.

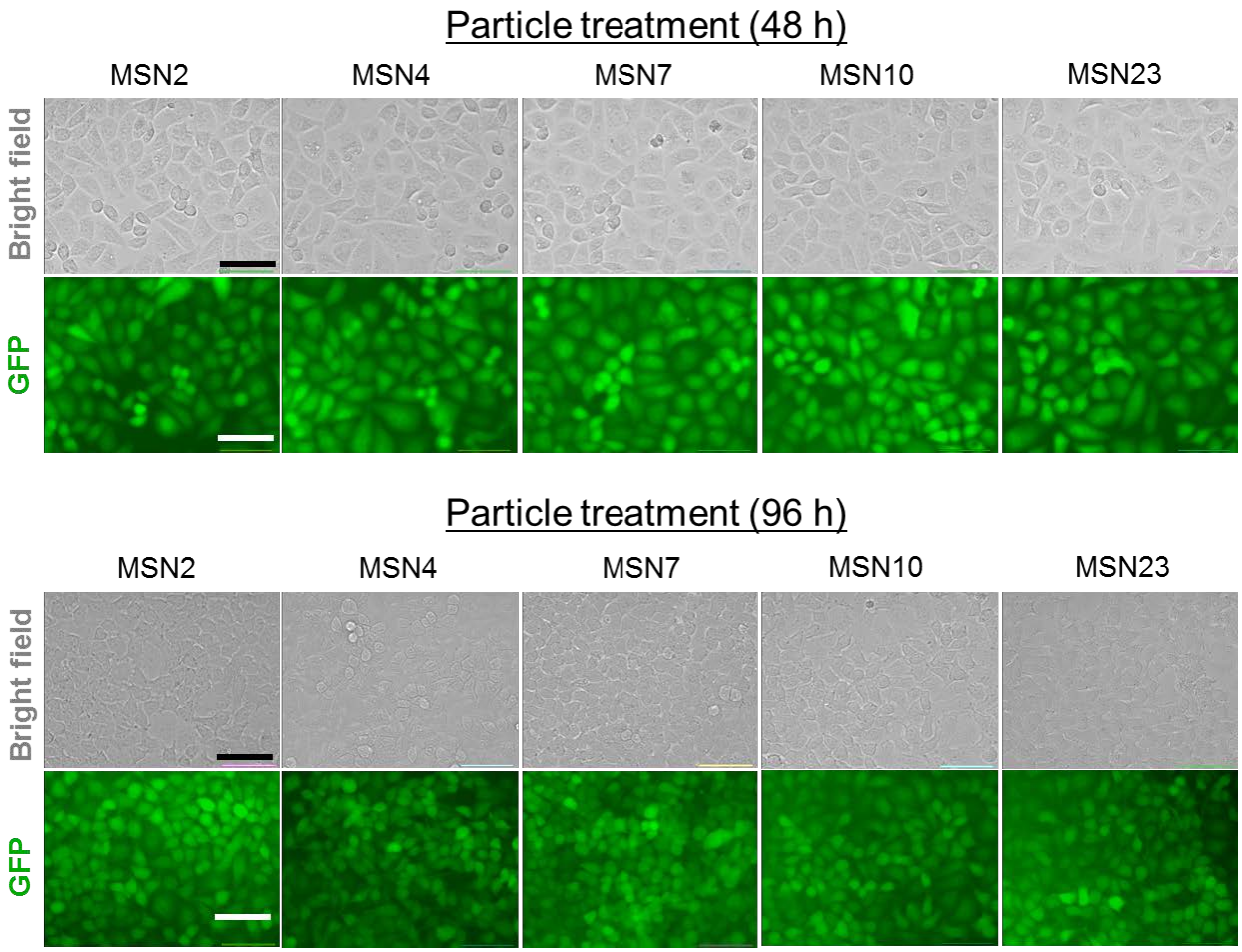

Figure S4. Optical and fluorescence images of GFP-HeLa after the MSN treatment. The green fluorescence of GFP-HeLa was not altered by the presence of MSN itself. Scale bar is 100 μm.

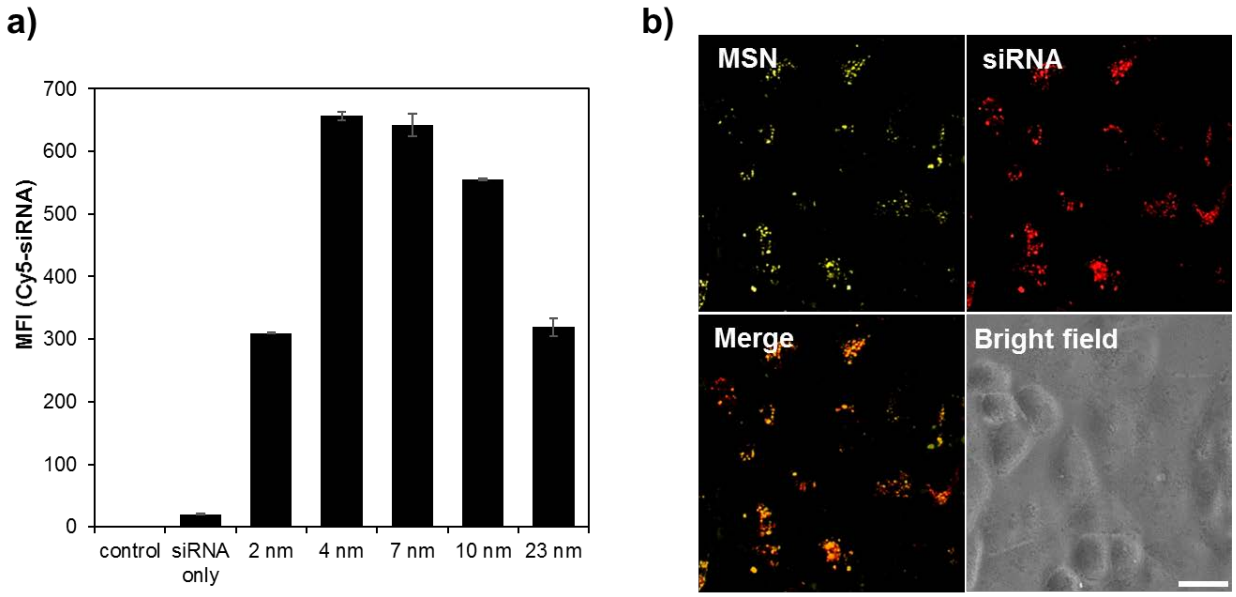

Figure S5. **(a)** Quantitative estimation of the relative amount of intracellularly uptaken Cy5-siRNA through flow cytometry analysis. **(b)** Representative fluorescence distribution in GFP-HeLa cells. Fluorescence from TAMRA-MSN10 and Cy5-siRNA were shown in cytoplasm. Manders' overlap coefficient of MSN and siRNA was calculated as 0.477, a parameter reflecting the degree of colocalization of two entities, suggesting that MSN and siRNA were partially separated from each other in cytoplasm. Scale bar is 20 μm.