ELECTRONIC SUPPORTING INFORMATION

Cellular uptake and gene delivery using layered double hydroxide nanoparticles

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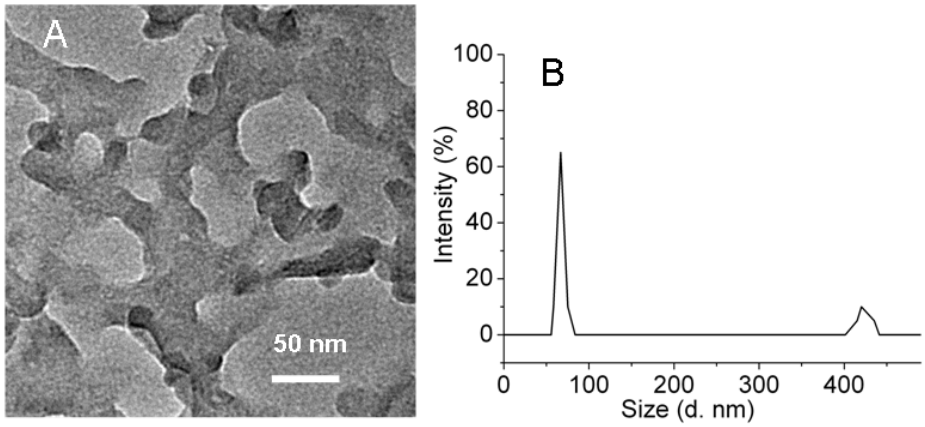

Figure S1. TEM image and particle size distribution of the CO_3LDH-FITC sample.

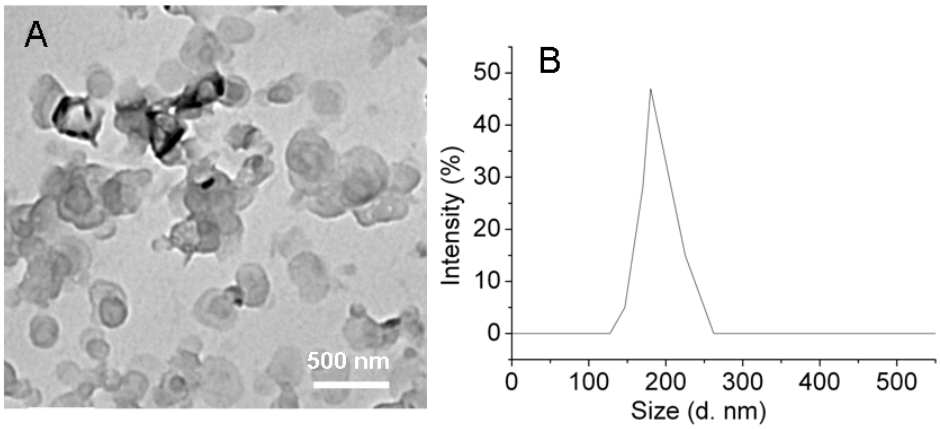

Figure S2. TEM image and particle size distribution of the NO_3LDH sample.

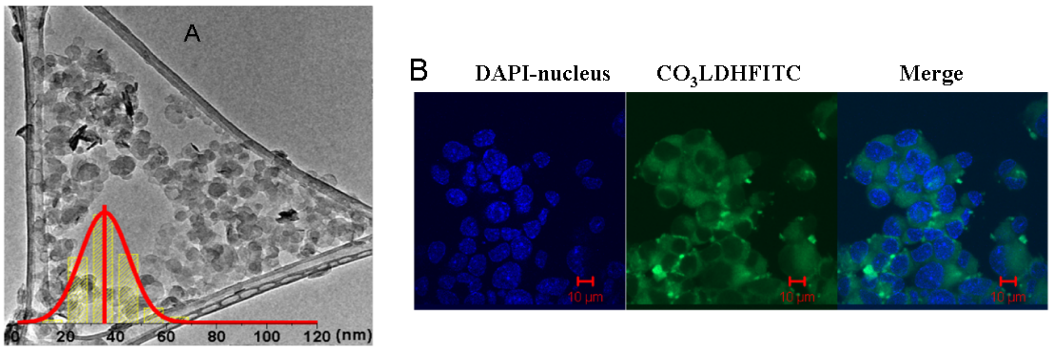

Figure S3. (A) TEM and size distribution of *ca*. 35 nm Mg_2AlCO_3LDH; (B) Confocal microscopic images of intracellular localization in NSC 34 cells of 25 μg/ml and 35 nm Mg_2AlCO_3LDH-FITC, incubated for 3h.

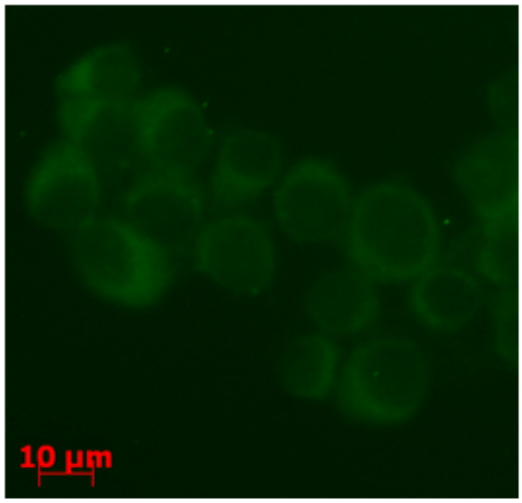

Figure S4. The fluorescent microscope image of intracellular localization in NSC 34 cells with 12.5 µg/ml NO_3LDH-FITC after incubation for 3h.

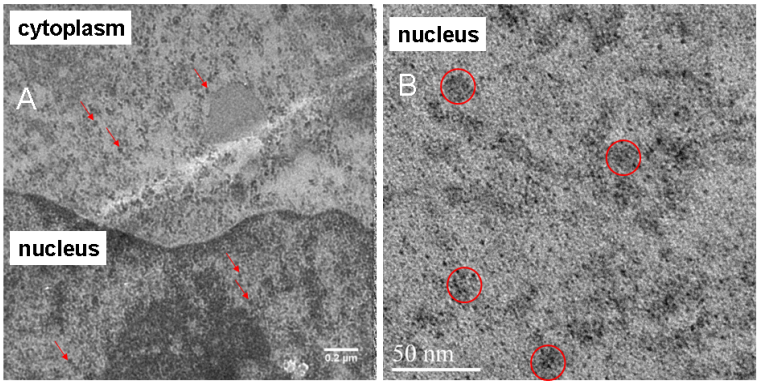

Figure S5. (A) TEM image of an NSC 34 cell nucleus after incubation with 25 µg/ml CO_3LDH-FITC nanoparticles for 5 h; (B) magnified TEM image of the nucleus. For clarity, nanoparticles and indication are highlighted by red arrows and circles.

Cell TEM preparation: Briefly, after the cells were incubated for 5 h with CO_3LDH-FITC suspension (25 µg/mL), cells were washed, prefixed with 2.5% glutaraldehyde and 2% paraformaldehyde solution, postfixed with 1% osmium tetroxide, dehydrated with a series of alcohols and infiltrated with resin. The resin sample block was trimmed, thin-sectioned to thickness of 70 nm, and stained with uranyl acetate and lead citrate, then collected on carbon film-coated copper grids for examining under the Transmission Electron Microscopy (TEM, JEOL 2100 with 200 kV as the accelerating voltage).

The TEM image show a number of high contrast objects *ca*. 20 nm in size both in the cellular cytoplasm and nucleus. For clarity, we have marked a few of these objects with red arrows. In the Figure S5B, we can find dark shadows marked with red circles compared with the background. Some of the objects are isolated and are *ca*. 20 nm in diameter, other are aggregated. We attribute these to Mg_3AlCO_3LDH-FITC nanoparticles.