ELECTRONIC SUPPORTING INFORMATION

Cellular uptake and gene delivery using layered double hydroxide nanoparticles

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Figure S2. TEM image and particle size distribution of [Mg₃Al(OH)₈]NO₃; (NO₃LDH).

Figure S3. TEM image of 35 nm CO₃LDH and confocal microscopic images of intracellular localization of 35 nm CO₃LDH-FITC in NSC 34 cells.

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Figure S1. TEM image and particle size distribution of the CO₃LDH-FITC sample.

Figure S2. TEM image and particle size distribution of the NO₃LDH sample.

Figure S3. (A) TEM and size distribution of ca. 35 nm Mg₂AlCO₃LDH; (B) Confocal microscopic images of intracellular localization in NSC 34 cells of 25 µg/ml and 35 nm Mg₂AlCO₃LDH-FITC, incubated for 3h.
**Figure S4.** The fluorescent microscope image of intracellular localization in NSC 34 cells with 12.5 µg/ml NO₃LDH-FITC after incubation for 3h.

**Figure S5.** (A) TEM image of an NSC 34 cell nucleus after incubation with 25 µg/ml CO₃LDH-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 CO₃LDH-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$_3$AlCO$_3$LDH-FITC nanoparticles.