Supporting Information

Differential intracellular influence of cancer cells and normal cells on magnetothermal properties and magnetic hyperthermal effects of magnetic nanoparticles

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Supplementary Figure 1. Characterization of citrate-MNPs. XPS analysis and fitted curves of (A) Fe 2p peaks, (B) O 1s peaks and (C) C 1s peaks of bare-MNPs. (D) FT-IR spectra of bare MNPs, citrate-MNPs and citrate. (E) Normalized field-dependent magnetization curve (M-H) of citrate-MNPs at 300 K. (F) Gross appearance of citrate-MNPs in aqueous solution. Hydrodynamic size distribution of citrate-MNPs in (G) MSCGM medium, (H) OBM medium and (I) DMEM medium.



Supplementary Figure 2. Viability of MSCs, NHOst cells and MG63 cells after culture with MNPs. Live/dead staining and WST-1 assay of (A, B) MSCs, (C, D) NHOst cells and (E, F) MG63 cells after culture with 0, 30, 60, 120 and 240 μ g/mL MNPs for 24 h. Data are expressed as the mean \pm S.D. (n = 3).



Supplementary Figure 3. Morphology of MSCs, NHOst cells and MG63 cells before and after culture with 120 μ g/mL MNPs for 12 h.



Supplementary Figure 4. Cell cytoskeleton assembly of MSCs, NHOst cells and MG63 cells. F-actin staining images of (A) cells cultured without MNPs, (B) cells cultured with MNPs, (C) cells cultured without MNPs but treated Cyto-D (D) cells cultured with MNPs and treated with Cyto-D. Prussian blue staining of internalized MNPs (E) before and (F) after Cyto D treatment.



Supplementary Figure 5. Magnetothermal conversion of MNPs in different cells without any treatment or after Cyto D, fixation and lysis treatments. (A, D, G) Temperature-time curve during 10 min AMF irradiation, (B, E, H) temperature increment after 10 min of AMF irradiation and (C, F, I) SAR of NMPs in (A-C) MSCs, (D-F) NHOst cells and (G-I) MG63 without any treatment or after Cyto D, fixation and lysis treatment.



Supplementary Figure 6. Flow Cytometry analysis of cell apoptosis and apoptosis rate of (A, B) MSCs, (C, D) NHOst cells and (E, F) MG63 cells without MNPs and AMF irradiation (control), without MNPs but with AMF irradiation (AMF), after culture with MNPs before AMF irradiation (MNPs), after culture with MNPs and Cyto D treatment (Cyto D), after culture with MNPs and AMF irradiation (MNPs + AMF), and after culture with MNPs, Cyto D treatment and AMF irradiation (MNPs + AMF + Cyto D).



Supplementary Figure 7. AC susceptibility of MNPs within (A) MSCs, (B) NHOst cells and (C) MG63 cells without any treatment or after Cyto D, fixation and lysis treatments.

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MNPs-PEG solutions	10%	20%	25%	30%	40%
50% PEG 35000	200 µL	400 µL	500 μL	600 µL	800 μL
Milli-Q water	675 μL	475 μL	375 μL	275 μL	75 μL
20 mg/mL MNPs	125 µL				

Supplementary Table 1. Preparation condition of PEG solutions containing MNPs.

Supplementary Table 2. Preparation condition of PAAm hydrogel embedded with MNPs.

MNPs-PAMm hydrogel	8%-Bis 0.008%	8%-Bis 0.025%	8%-Bis 0.03%	8%-Bis 0.06%	8%-Bis 0.08%
20 mg/mL MNPs	125 μL	125 μL	125 µL	125 μL	125 µL
64%AAm	125 µL	125 µL	125 µL	125 µL	125 µL
Milli-Q water	721 μL	704 µL	699 µL	669 µL	649 µL
1%Bis	8 μL	25 µL	30 µL	60 µL	80 µL
TEMED	1 µL	1 µL	1 µL	1 µL	1 µL
APS (10%)	20 µL	20 µL	20 µL	20 µL	20 µL