Magnetic assembly-mediated enhancement of differentiation of mouse marrow cells cultured on magnetic colloidal assemblies

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Supporting Information

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Supporting Information

Figure S1

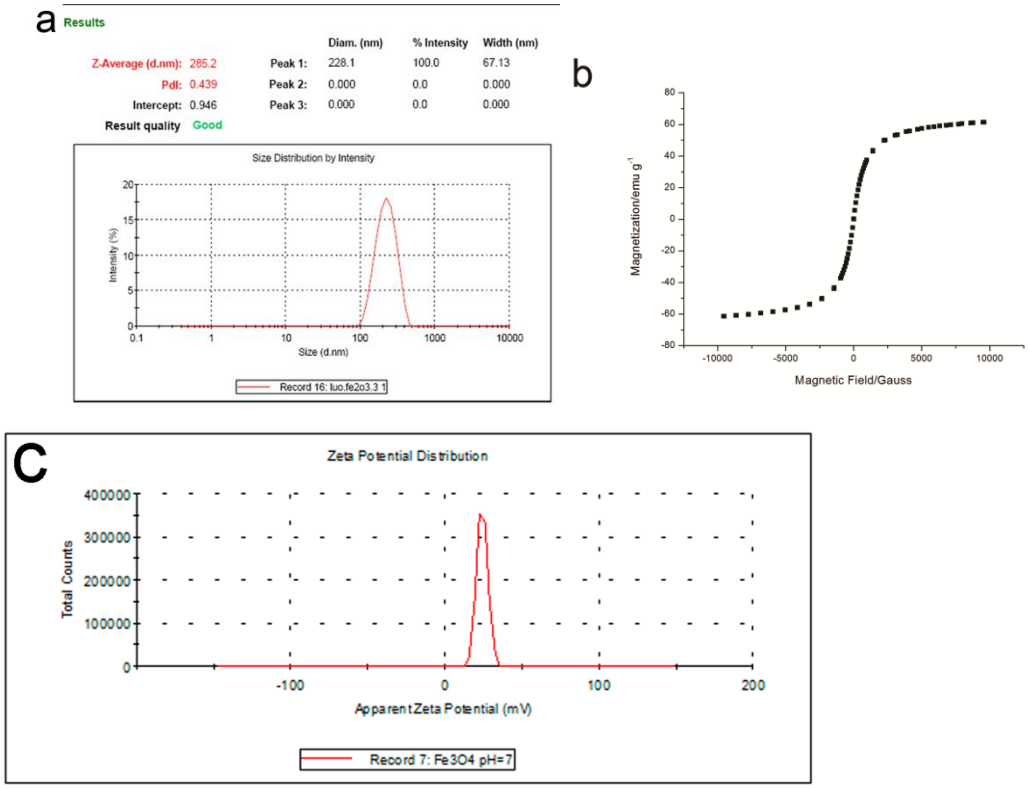

Figure S1 characterization of magnetic nanoparticles. **a**, DLS (Dynamic Light Scattering). **b**, VSM (Vibrating Sample Magnetometer). **c**, ζ potential (pH=7).

Figure S2

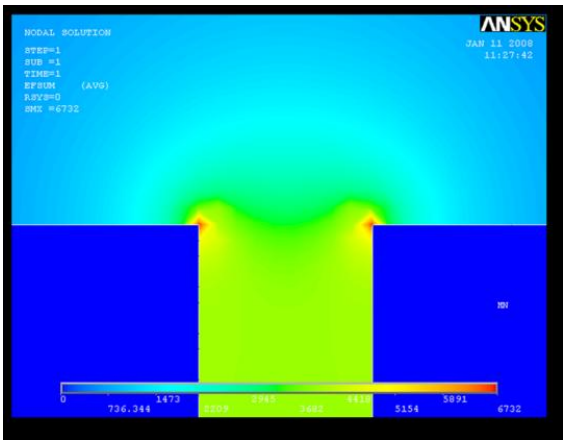

Figure S2 Simulation of field distribution between two magnetic poles. Red color denotes high field strength. Same color means uniform field.

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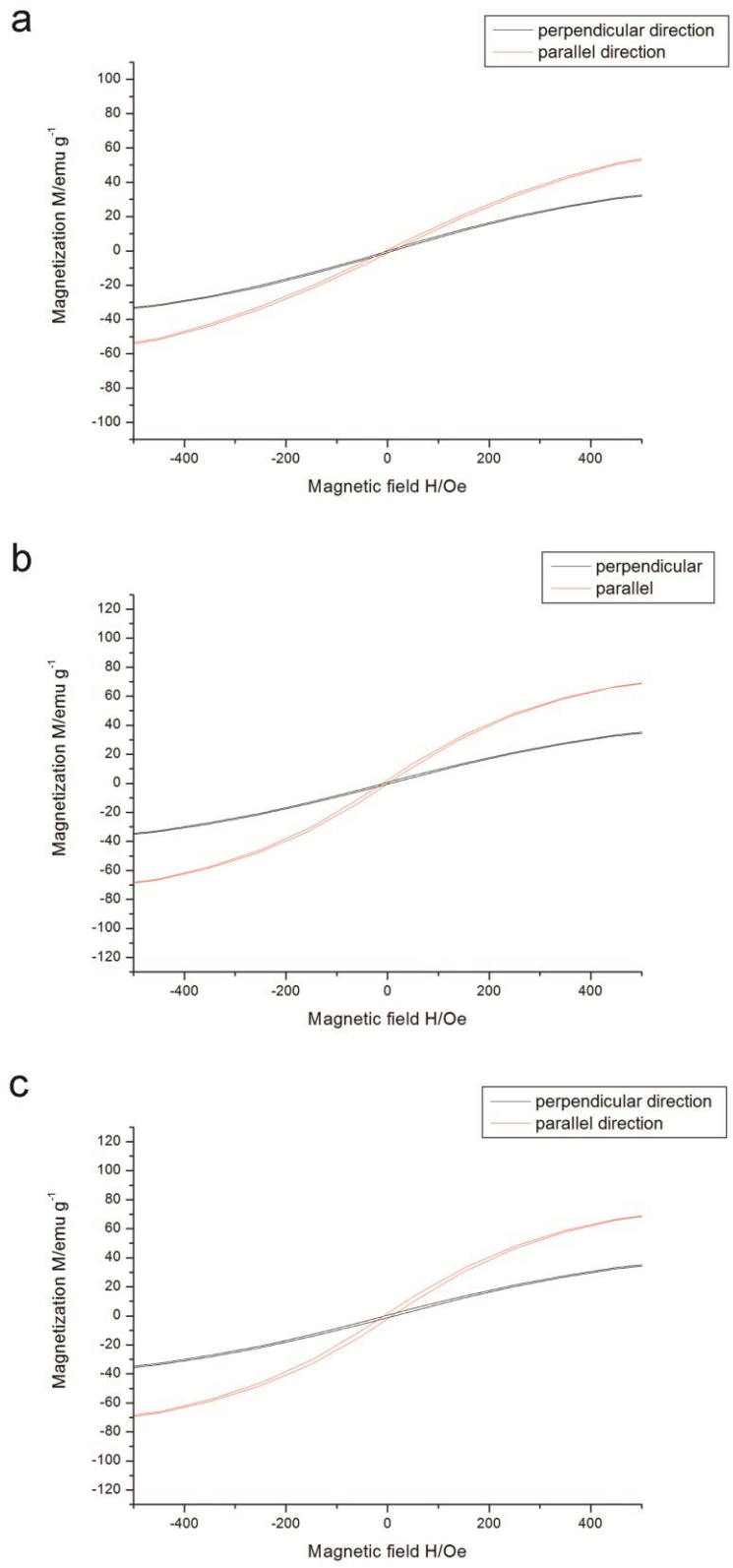
Figure S3



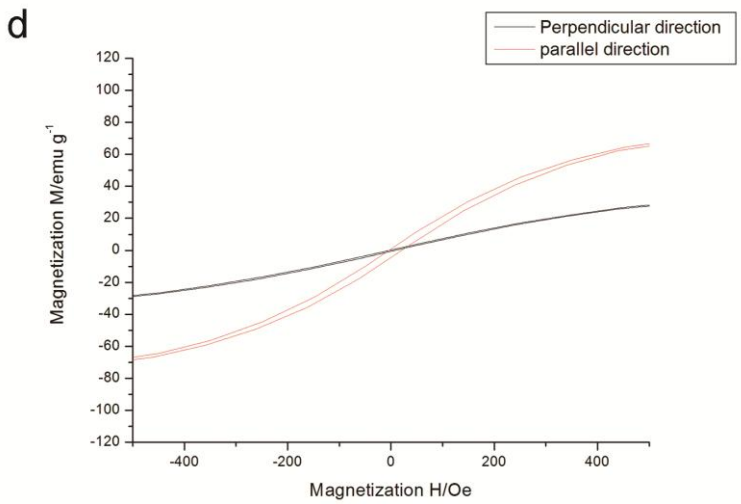


Figure S3 Magnetization curves of different samples of magnetic nanoparticles. **a**, natural aggregates in the absence of magnetic field. **b**, assemblies fabricated under 20mT. **c**, assemblies fabricated under 40mT. **d**, assemblies fabricated under 80mT.

Figure S4

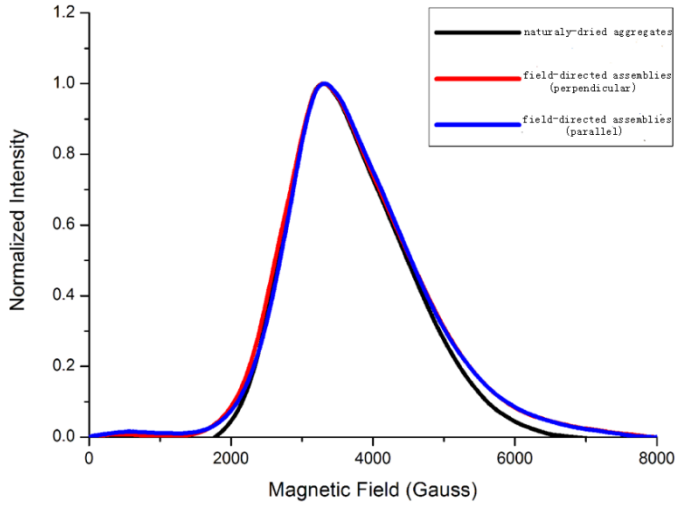


Figure S4 FMR spectra of naturally-dried aggregates, perpendicular field-directed and parallel field-directed assemblies of DMSA-capped γ-Fe_2O_3 nanoparticles. The curves showed little difference.

Figure S5

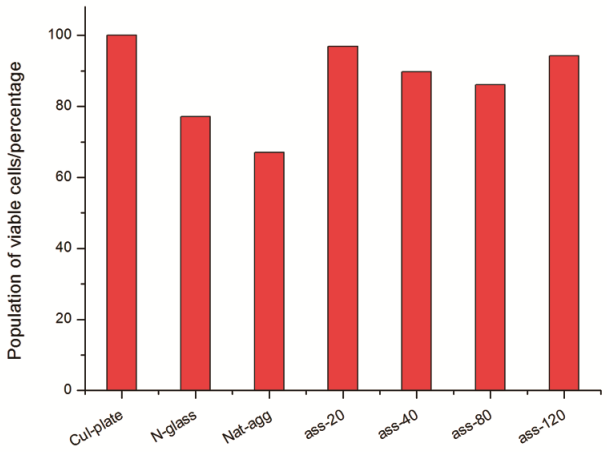


Figure S5 Measurement of cellular viability with flow cytometry.

Figure S6

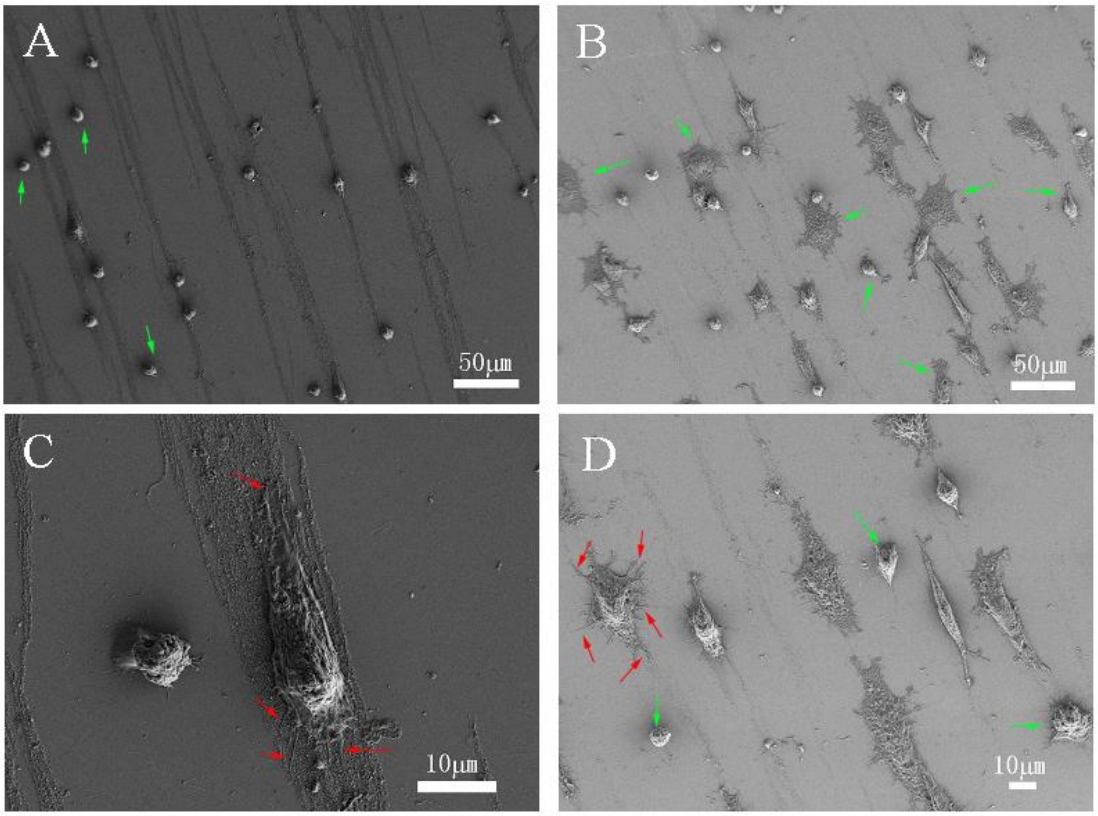


Figure S6 Characterization of the cellular adhesion on the assemblies of γ-Fe_2O_3 nanoparticles on four different positions.

Figure S7

Figure S7 Western Blotting measurement of ALP expression. From the left to the right: commerical culturing plate, bare glass plate, the naturally-dried aggregates, the stripe-like assemblies fabricated by 20mT field, the stripe-like assemblies fabricated by 40mT field, the stripe-like assemblies fabricated by 80mT field, the stripe-like assemblies fabricated by 120mT field.

Figure S8

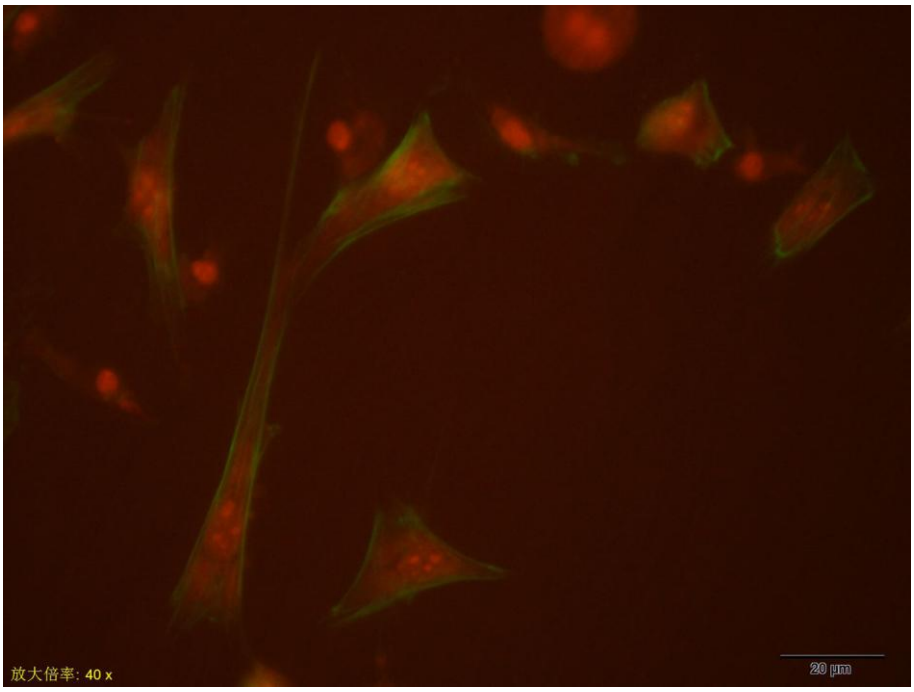


Figure S8 Fluorescent staining of cytoskeleton, which were elongated by the assemblies on the culturing substrate. Green color: cytoskeleton. Red color: nucleolus.

Figure S9

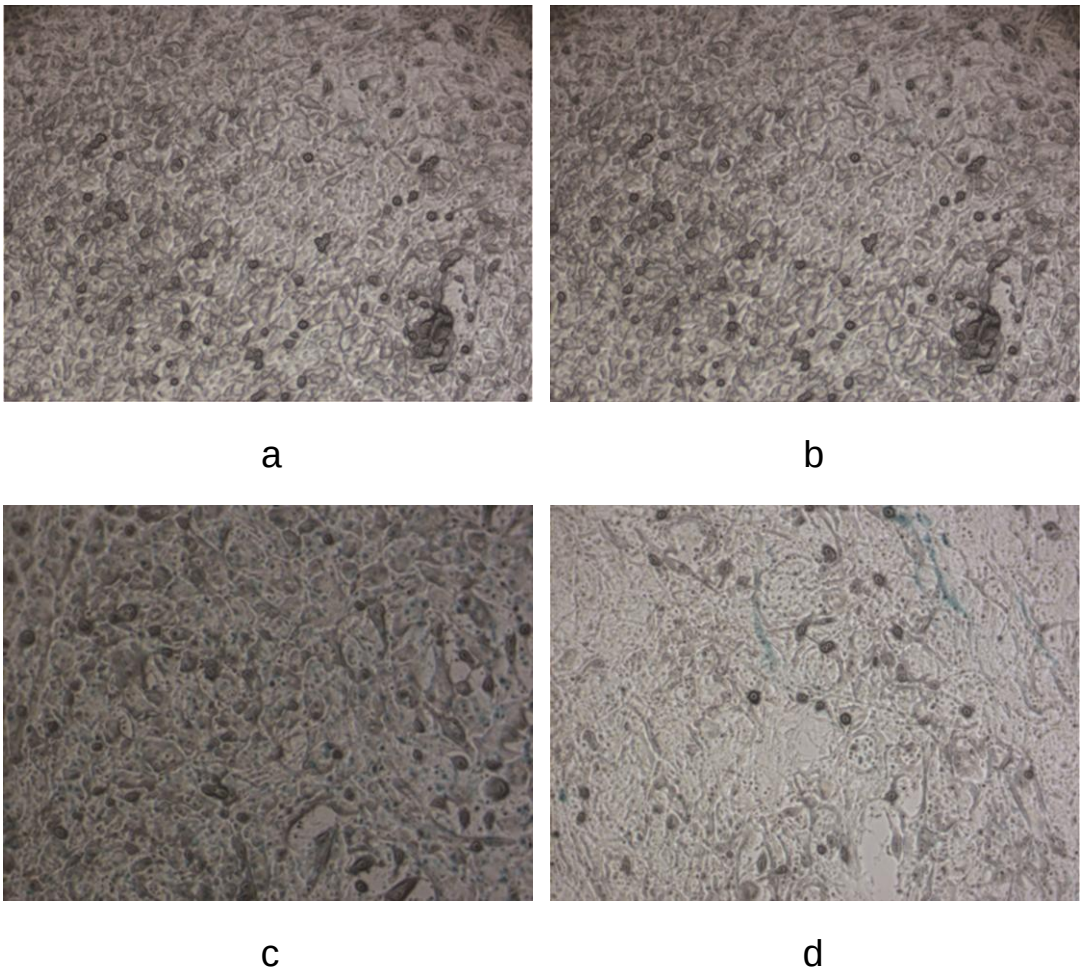


Figure S9 Prussian blue staining of cells cultured on the commercial culturing plate (a), the bare glass plate (b), the naturally-dried aggregates of nanoparticles (c) and the stripe-like assemblies of nanoparticles (d).

Figure S10

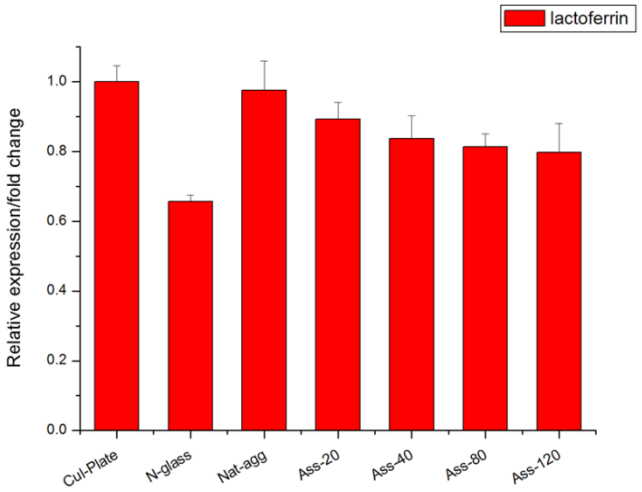


Figure S10 RNA lactoferrin transcription of cells cultured on different surfaces with q-PCR. Here Cur-plate means the commercial culturing plate for cells. N-glass means the bare glass plate. Nat-agg means the naturally-dried aggregates of nanoparticles. Ass-20, Ass-40, Ass-80 and Ass-120 mean the stripe-like assemblies fabricated under the 20mT, 40mT, 80mT and 120mT field strength, respectively.