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Electronic supplementary information for:

Improved Neural Differentiation of Stem Cells mediated by Magnetic Nanoparticles-based Biophysical Stimulation

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Tab. S1 Size and zeta-potential of MIONs dispersed in different solvents at different times.

	H_2O	PBS	DMEM
Size/nm (0 h)	56.1	56.9	301.0
Size/nm (24 h)	56.8	56.5	637.8
Zeta/mV (0 h)	-24.2	-22.6	-13.8
Zeta/mV (24 h)	-24.9	-22.2	-13.9

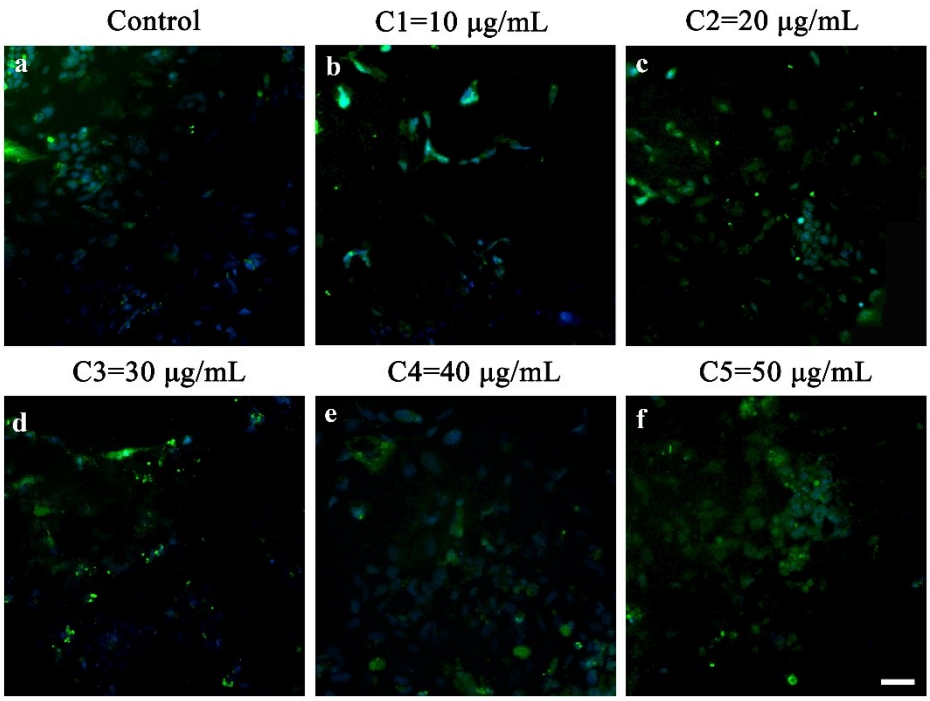

Fig. S1 Immunofluorescence results of cells cultured in medium containing different concentrations of DHCA. The concentrations of DHCA from figure a to figure f were 0, 0.1, 0.2, 0.3, 0.4 and 0.5 mM respectively (Scale bar: 50μm).

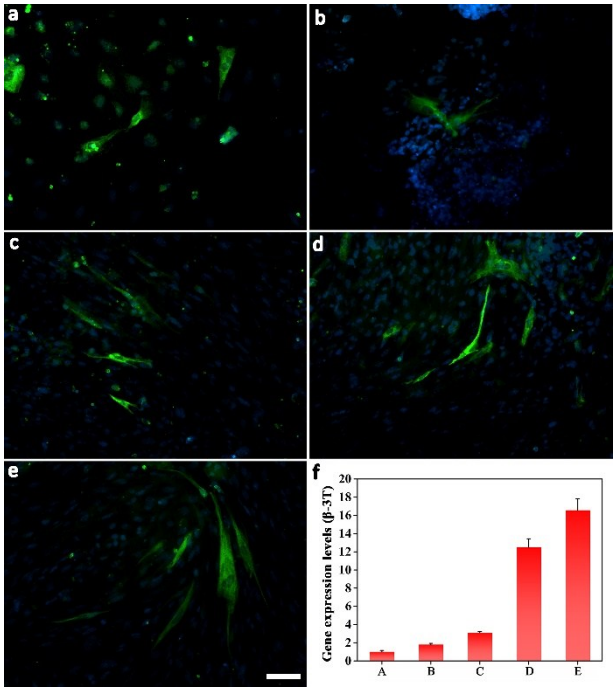

Fig. S2 Immunofluorescence results of mESCs cultured in different conditions for 7 days (a-e), green represented neural marker β3-tubulin, blue represented nucleus of

cells(Scale bar: 50 μm). (a) Cells untreated. (b) Cells cultured under a magnetic field. (c) Cells cultured with MIONs. (d) Cells cultured with MIONs under a magnetic field. Cells in (a), (b), (c), (d) were cultured in medium without RA. Cells in (e) were treated with RA. (f) Results of the relative mRNA levels of mature neural marker gene β3-tubulin.

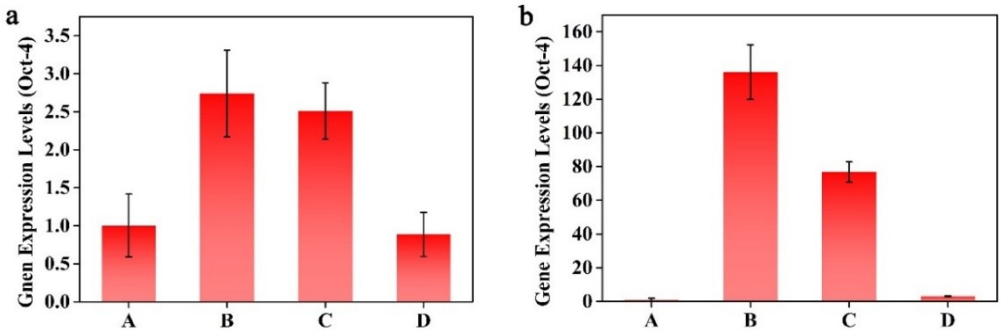

Fig. S3 Relative mRNA levels of pluripotent marker gene Oct-4 in mESCs cultured for (a) 7 days, (b) 14 days, respectively. (A) Cells untreated. (B) Cells cultured under a magnetic field. (C) Cells cultured with MIONs. (D) Cells cultured with MIONs under a magnetic field.