Supplementary Information

"Cleaning" the Surface of Hydroxyapatite Nanorods by a Reaction-Dissolution Approach

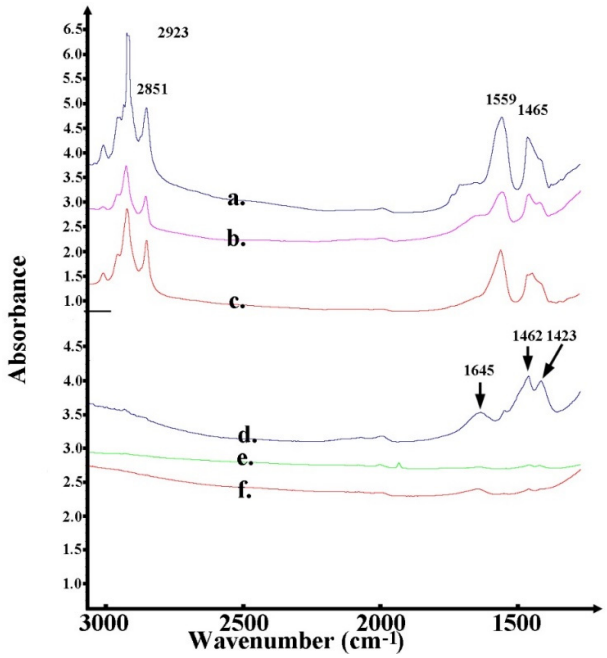

Figure S1. a) FT-IR spectrum of surfactant-coated HAP-NRs; b) FT-IR spectrum of HAP-NRs treated with 0.5 M NaOH solution at 90 °C; c) FT-IR spectrum of HAP-NRs treated with 95% ethanol at 90 °C; d) FT-IR spectrum of HAP-NRs treated with a solution containing 95% ethanol+5% 10M NaOH at 90 °C; e) FT-IR spectrum of calcined HAP-NRs; f) FT-IR spectrum of purchased HAP powder.

Figure S2. (a) Oleic acid-coated iron oxide nanoparticles are soluble in hexane; (b) oleic acid-free iron oxide nanoparticles are soluble in water after the treatment of our solvent-extraction approach.

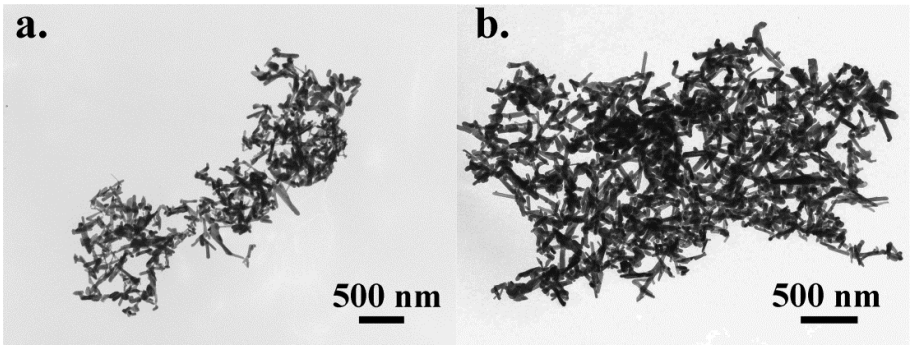

Figure S3. Calcined HAP-NRs with irregular shapes.

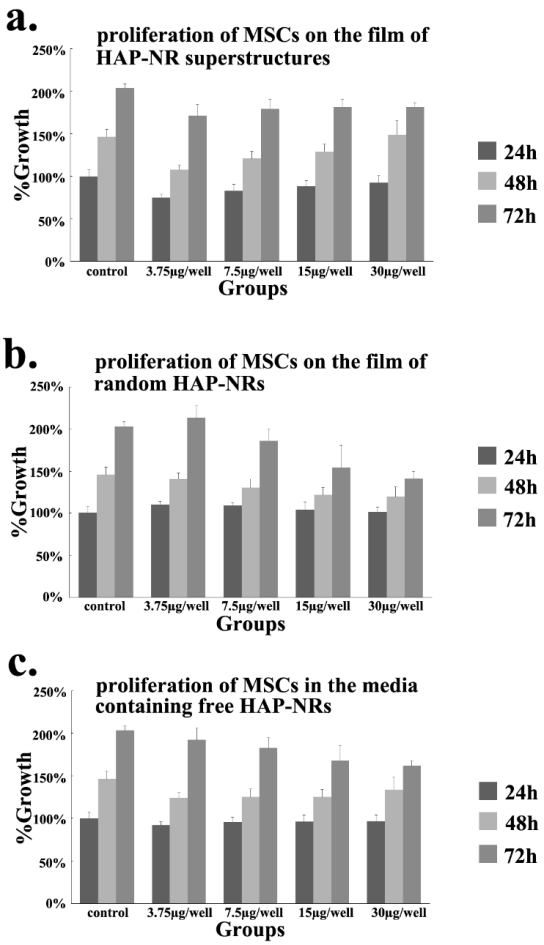

Figure S4. The MTT assay results of the proliferation of MSCs in 200 μl of cell medium cultured (a) on a film of HAP-NR superstructures, (b) on a film of randomly oriented HAP-NRs, and (c) in HAP-NR-containing media with different amount of HAP-NRs (0, 3.75, 7.5, 15, and 30 μg/well) at different time points (24 h, 48 h, and 72 h).

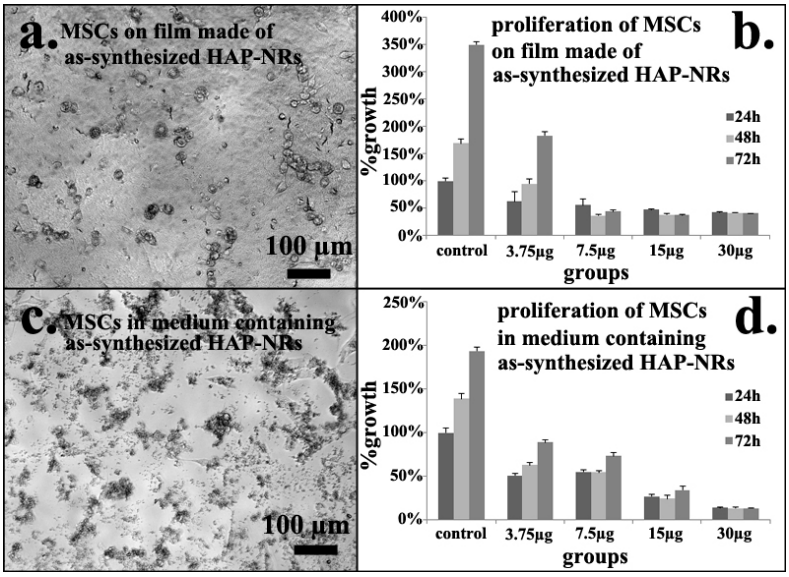

Figure S5. Morphology and proliferation of mesenchymal stem cells (MSCs) on the films of as-synthesized hydroxyapatite nanorods (HAP-NRs). (a) MSCs cannot adhere to and spread on the film made of the as-synthesized HAP-NRs after cultured for 48 h. (b) The MTT assay results of the proliferation of MSCs on the as-synthesized HAP-NR films with different amounts of HAP-NRs (0, 3.75, 7.5, 15, and 30 μg/well) at different time points (24 h, 48 h, and 72 h). (c) Free as-synthesized HAP-NRs are attached and aggregated onto MSCs after being cultured for 48 h. However, MSCs do not grow well with free as-synthesized HAP-NRs in medium. (d) The MTT assay results of the proliferation of MSCs in the medium containing as-synthesized HAP-NRs with different amounts of HAP-NRs (0, 3.75, 7.5, 15, and 30 μg/well) at different time points (24 h, 48 h, and 72 h).

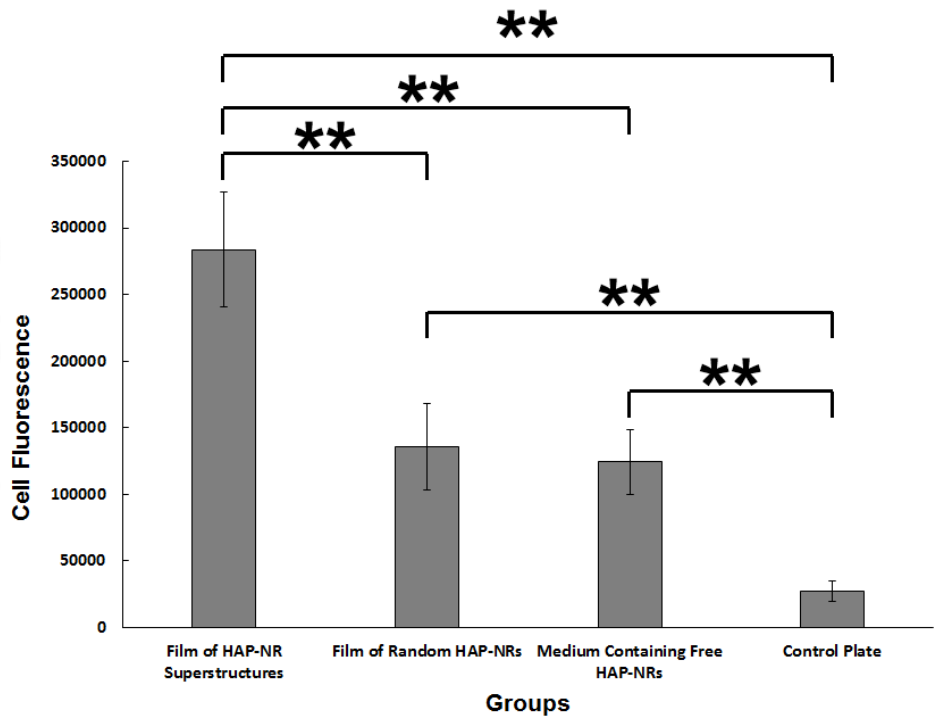

Figure S6. The intensity of fluorescence staining for antibody (OPN) of each group (the osteogenic differentiation of MSCs under four conditions: (1) on the HAP-NR superstructure films and incubated in the osteogenic differentiation media; (2) on the randomly oriented HAP-NR films and incubated in the osteogenic differentiation media; (3) on the culture plate and incubated in the HAP-NR-containing osteogenic differentiation media; and (4) on the culture plate. For each condition, 30 individule cells (from multiple images for each group) were analyzed from immunofluoresce images using image J. Since the fluorescence intensity indicates the expression level of OPN in each group, the data can quantitaively show the osteogenic differentiation level of MSCs under four conditions. **$p<0.01$.