

Figure S1: Iron oxide nanoparticles fabrication

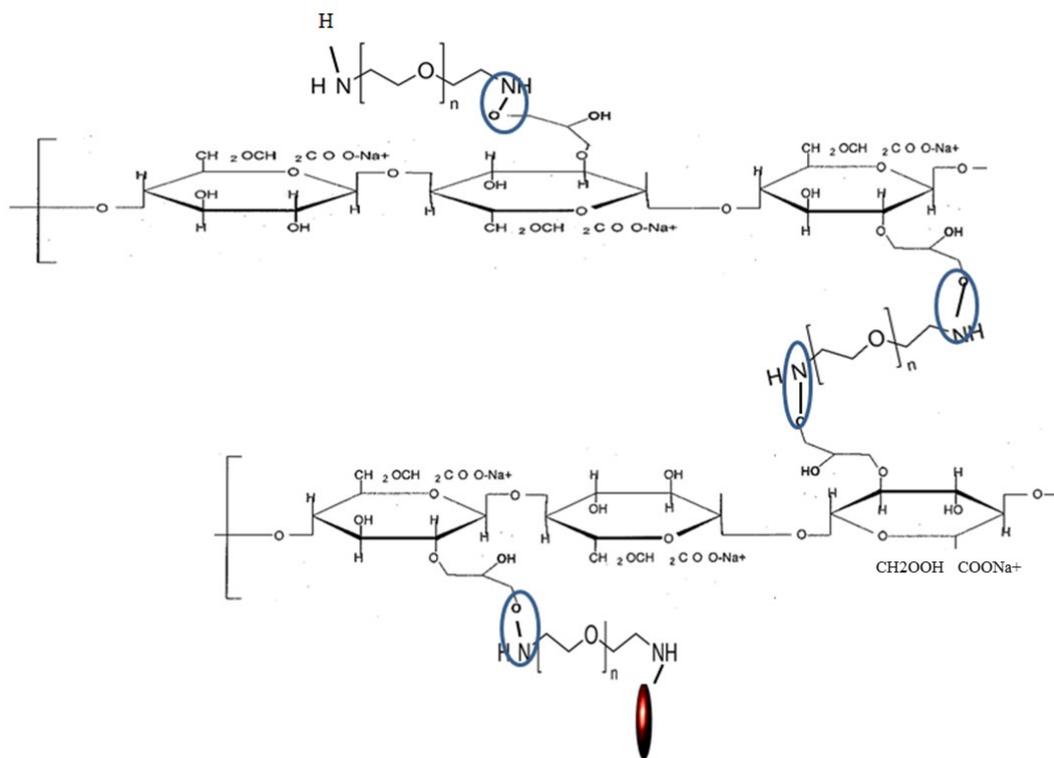
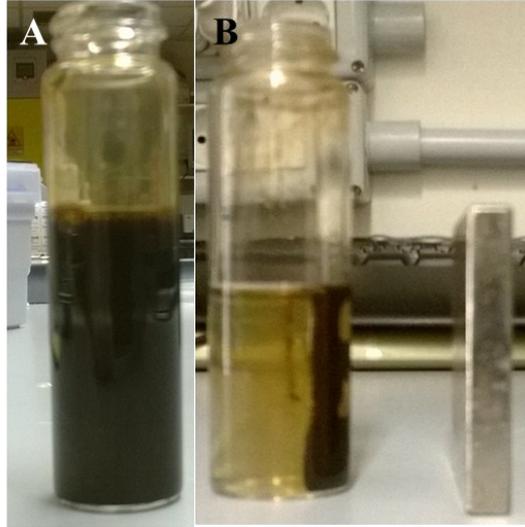
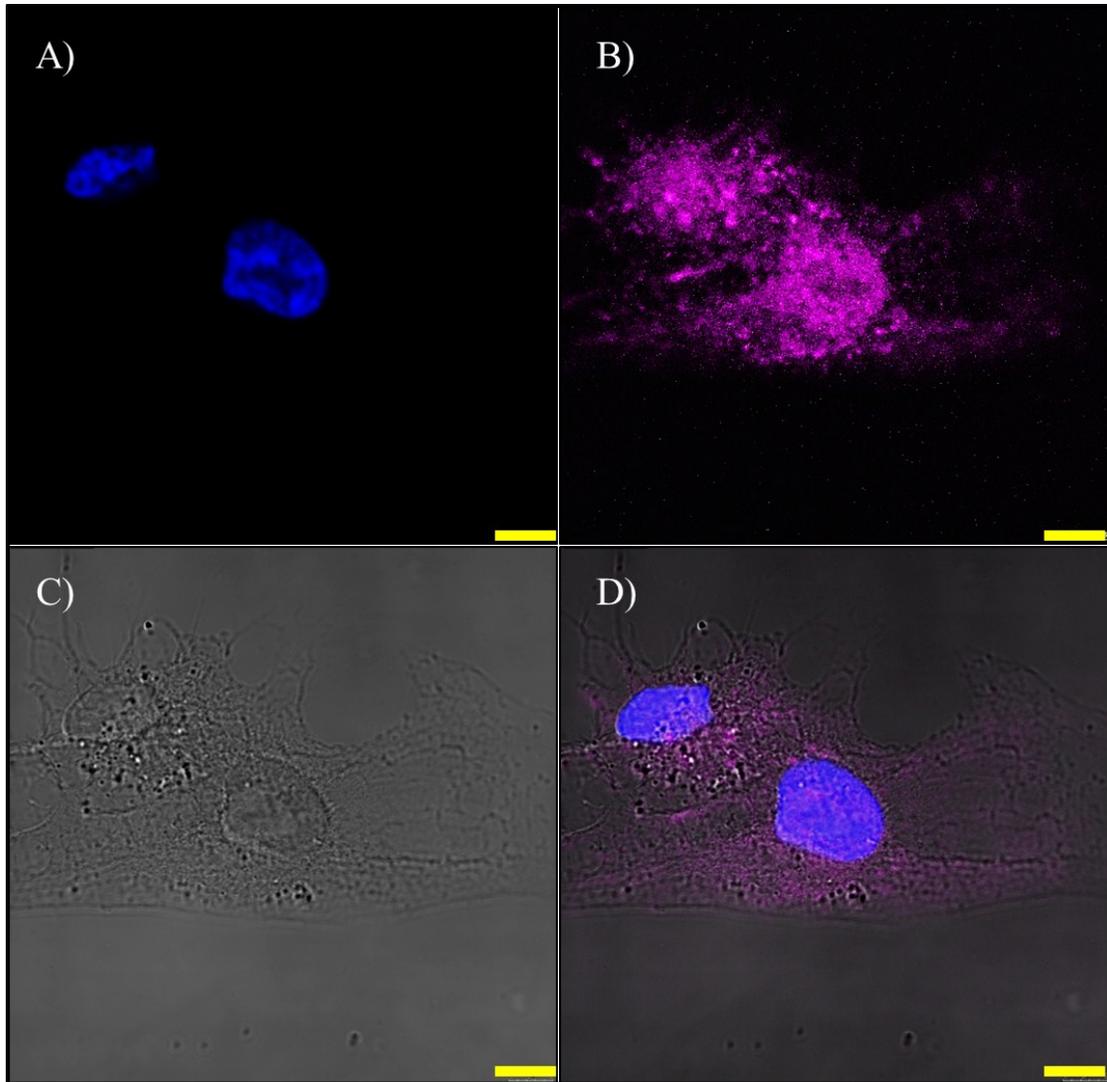


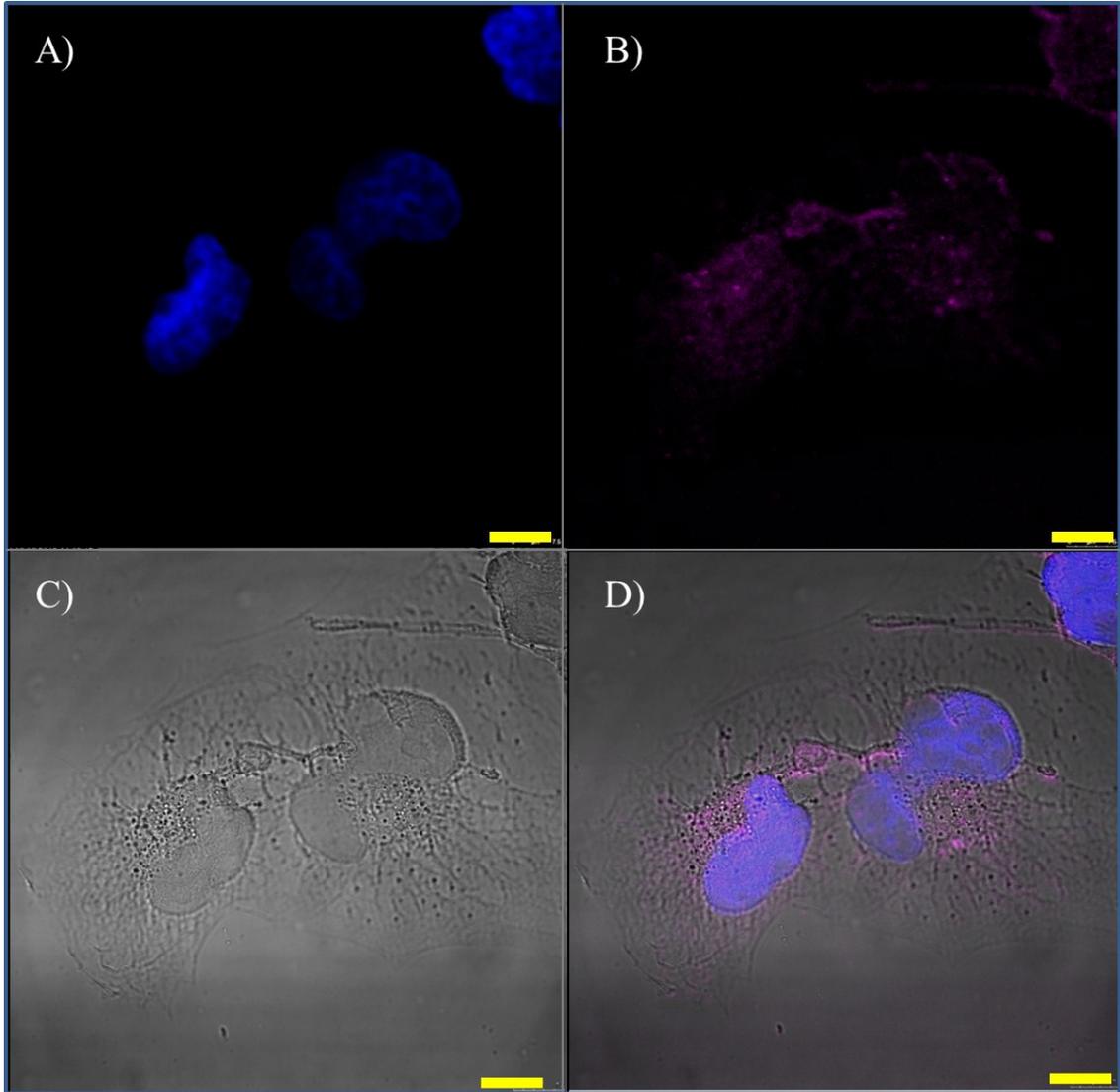
Figure S2: Cross-linking of carboxymethyl cellulose (CMC) and polyethylene glycol (PEG)



*Figure S3:* Behavior of iron oxide NPs A) in absence and B) in presence of an external magnetic field



*Figure S4:* Untreated HLF immuno-fluorescence assay of anti-TGF $\beta$ . A) Cells nuclei stained by DAPI (blue channel); B) TGF  $\beta$  stained by secondary anti-rabbit AF647 (far red channel); C) Transmission channel; D) Overlay channel. Zoom 4x. Scale bar 5  $\mu$ m (yellow bar).



*Figure S5:* Free Alk1fc immuno-fluorescence assay of anti-TGF $\beta$ . A) Cells nuclei stained by DAPI (blue channel); B) TGF  $\beta$  stained by AF647 anti-rabbit secondary antibody (red channel); C) transmission channel D) Overlay channel. Zoom 4X. Scale bar 5  $\mu$ m (yellow bar).