

SUPPORTING INFORMATION

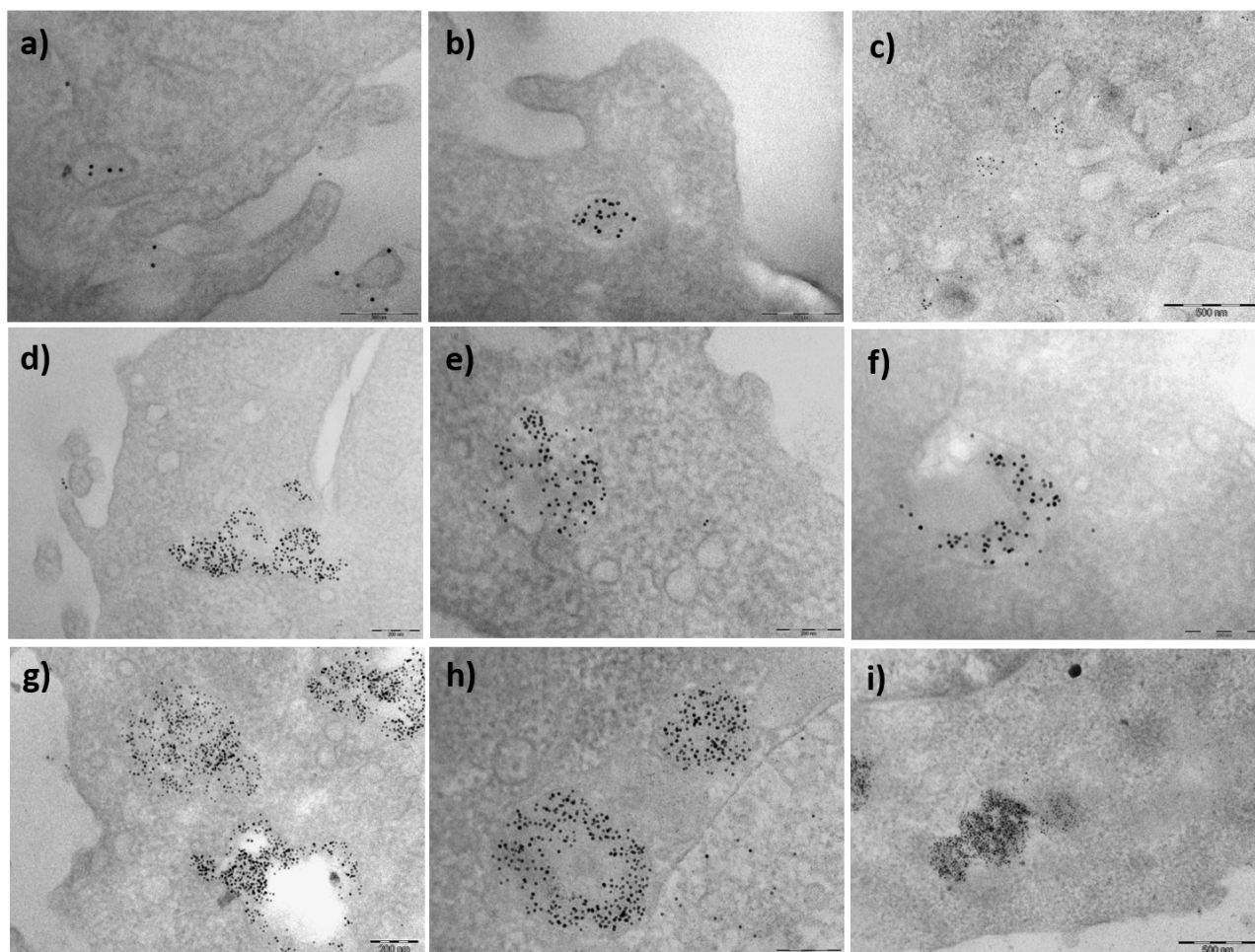


Figure S1: TEM images of cells undergoing internalization of MNP-AFRA after 1 h (a-f) and 24 h (g-i) of continuous incubation. At 1 h, small incoming vesicles can be observed close to the cell membrane (a-c). Besides, the small vesicles start to fuse into larger bodies (d-f). After 24 h, the content of the single vesicles has been transferred to and accumulated into large and uniform endosomes that localize in the perinuclear region of the cell.

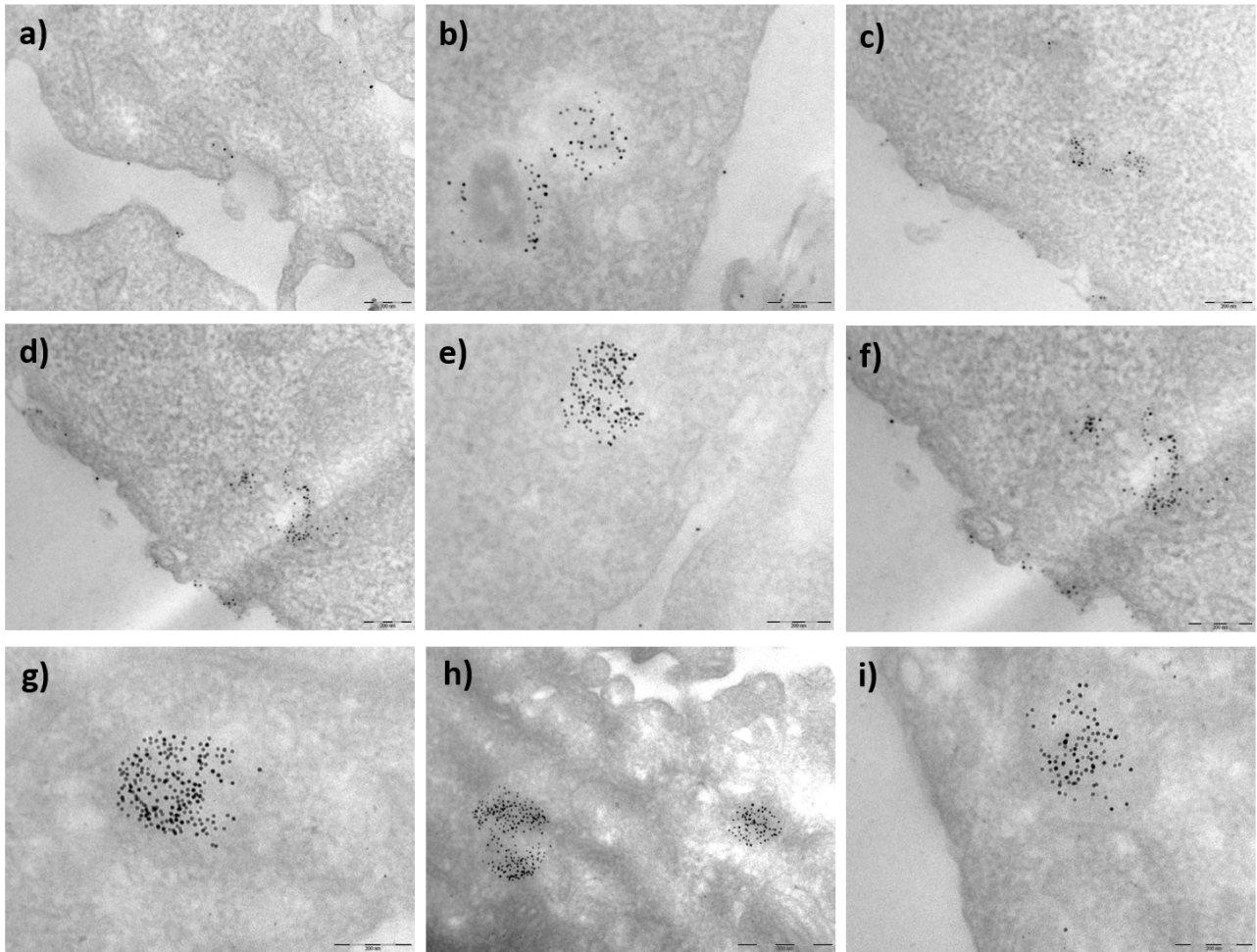


Figure S2: TEM images of cells undergoing internalization of MNP-PEG after 1 h (a-f) and 24 h (g-i) of continuous incubation. In the case of NP-PEG the uptake process is non-specific and does not involve the interaction with membrane receptors. However, the internalization occurs quickly, and after 1 h typical endosomes can be observed (a-f), which become richer in NP after longer incubation time (g-i). It is worth to note that intracellular trafficking of small vesicles is not as consistent as in the case of MNP-AFRA, likely due to the absence of a receptor-mediated uptake mechanism.

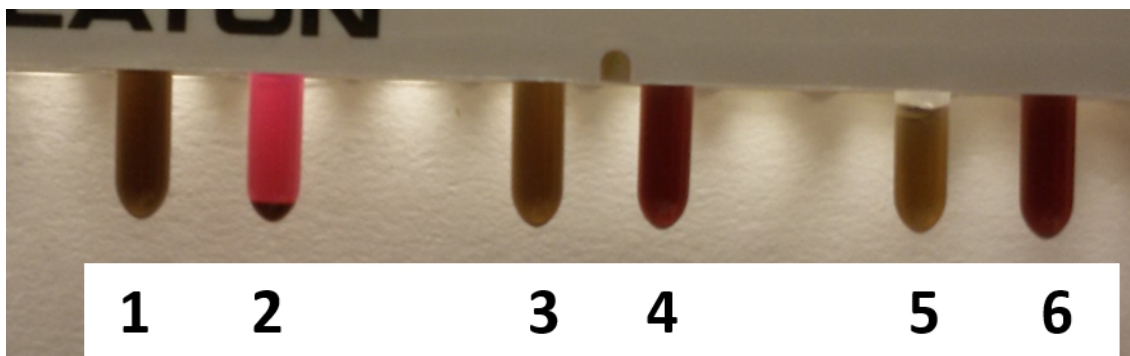


Figure S3: Magnetic nanoparticles stability in PBS and culture medium containing 10% FBS. MNP20 were kept for 1 h in either PBS (1-3-5) or cell culture medium supplemented with 10% FBS (2-4-6). The stability of three different surface coatings was analysed: polymer coated MNP, MNP-PC (1-2), PEG functionalized

MNP, MNP-PEG (3-4), and AFRA conjugated MNP, MNP-AFRA (5-6). The MNP-AFRA and MNP-PEG are stable over 24 h in culture media and PBS.

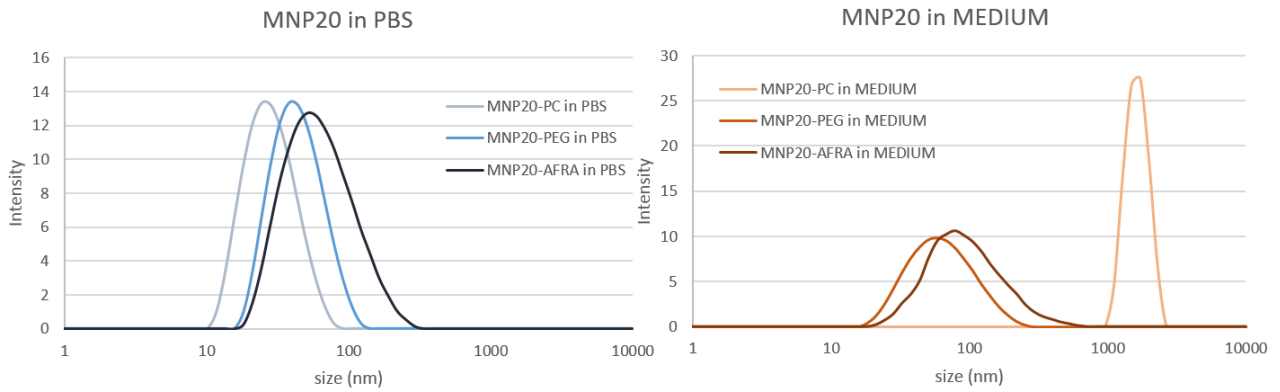


Figure S4: DLS measurements of MNP20 in PBS and in culture medium. The curves show the poor stability of the MNP20-PC in medium as they quickly aggregate, and the adsorption of serum proteins on the surface in the case of MNP-PEG and MNP-AFRA, whose hydrodynamic size results broadened in culture medium.