Electronic Supplementary Material (ESI) for Nanoscale.

Cancer-Leukocyte Hybrid Membrane-Cloaked Magnetic Beads for Ultrasensitive Isolation, Purification and non-destructive Release of Circulating Tumor Cells

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Materials and Reagents

The chemicals iron (III) chloride anhydrous ($FeCl_3$), polyacrylic acid (PAA), diethylene glycol (DEG), 3-Mercaptopropyltrimethoxysilane (MPTMS, 95%), Hoechst 33258, and Sulforhodamine B (SRB) were bought from the Sigma-Aldrich Co. (St Louis, MO, USA). The antibody of epithelial cell adhesion molecule (EpCAM) (PE594 labeled) was obtained from Novus Biologicals. Phycoerythrin-conjugated anti-cytokeratin (PE-anti-CK) and fluorescein isothiocyanate-conjugated anti-human CD45 (FITC-anti-CD45) were purchased from BD Biosciences (USA).

Characterization

Transmission electron microscopy (TEM) images were obtained with a JEM-2100F transmission electron microscope (JEOL Ltd, Japan) with a 200 kV voltage. The size of nanoparticles was measured on a Zeta PALS + BI-90Plus system. Magnetic properties were measured by VSM at 300 K. The UV-visible absorption spectra were obtained on a U-3310 spectrophotometer (Hitachi, Japan).

Figure Caption

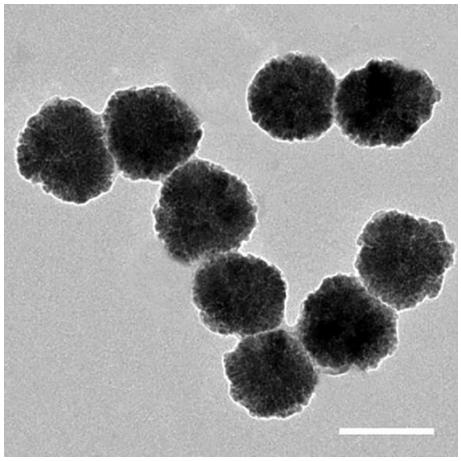

Figure S1. TEM image of MBs (scale bar =100 nm).

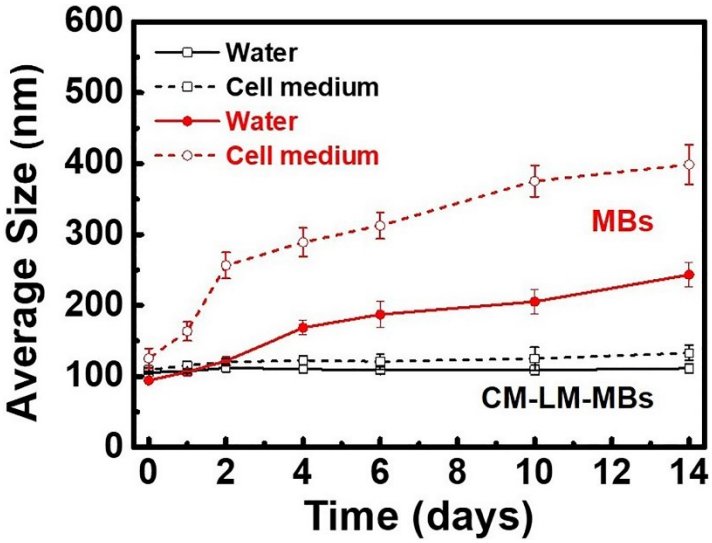

Figure S2. Hydrodynamic size of CM-LM-MBs and MBs in pure water and cell medium after 14 days. Data represent the mean ± SD. (n=3).

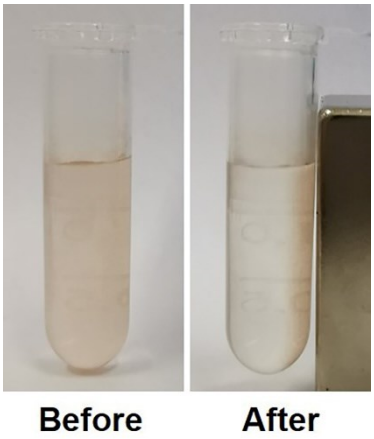

Figure S3. The digital photos of CM-LM-MBs before and after magnetic separation.

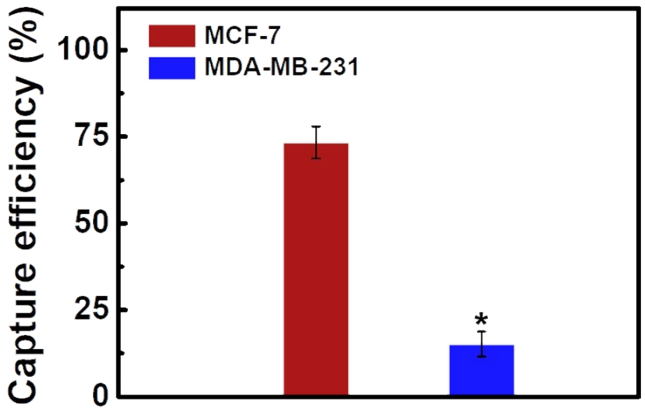

Figure S4. The capture efficiency of CM-LM-MBs towards MCF-7 cells and MDA-MB-231 cells. *P < 0.05 versus MCF-7 groups; Data represent the mean ± SD. (n = 5).

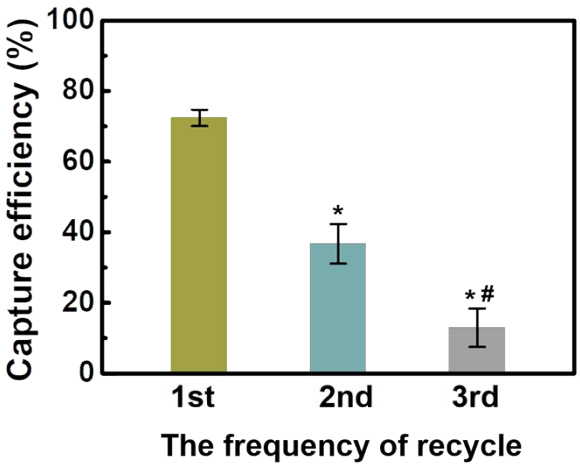

Figure S5. The capture efficiency of CM-LM-MBs towards MCF-7 cells after first second and third recycle. *P < 0.05 versus 1st groups; #P < 0.05 versus 2nd groups; Data represent the mean ± SD. (n = 5).

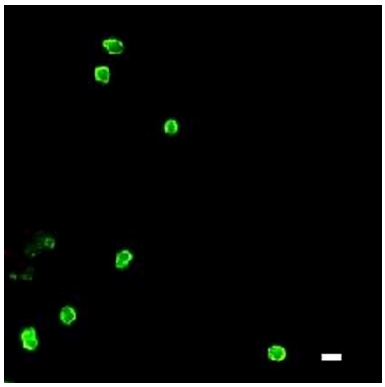

Figure S6. Fluorescence images of calcein AM/propidium iodide co-stained captured 4T1 cells (scale bar =10 μm).