Electronic Supplementary Material (ESI) for Nanoscale.

Supplementary Date

The novel nanomissile targeting two biomarkers and accurately bombing CTCs with doxorubicin

Y Gao[a§], XD Xie[a§], FQ Li[a], YS Lu[a], T Li[a], S Lian[a], YY Zhang[a], HJ Zhang[a], H Mei[a], and L Jia[a]*

a: Cancer Metastasis Alert and Prevention Center, and Pharmaceutical Photocatalysis of State Key Laboratory of Photocatalysis on Energy and Environment, College of Chemistry, Fuzhou University, Fuzhou 350108, China

*Corresponding author: Lee Jia (pharmlink@gmail.com or cmapcjia1234@163.com), 2 Xueyuan Road, Yangguang Building, 6FL., Fuzhou University, Fuzhou, Fujian, China, 350108. Phone and Fax: +86-0591-2286-7183.

§, these authors contributed equally to the work

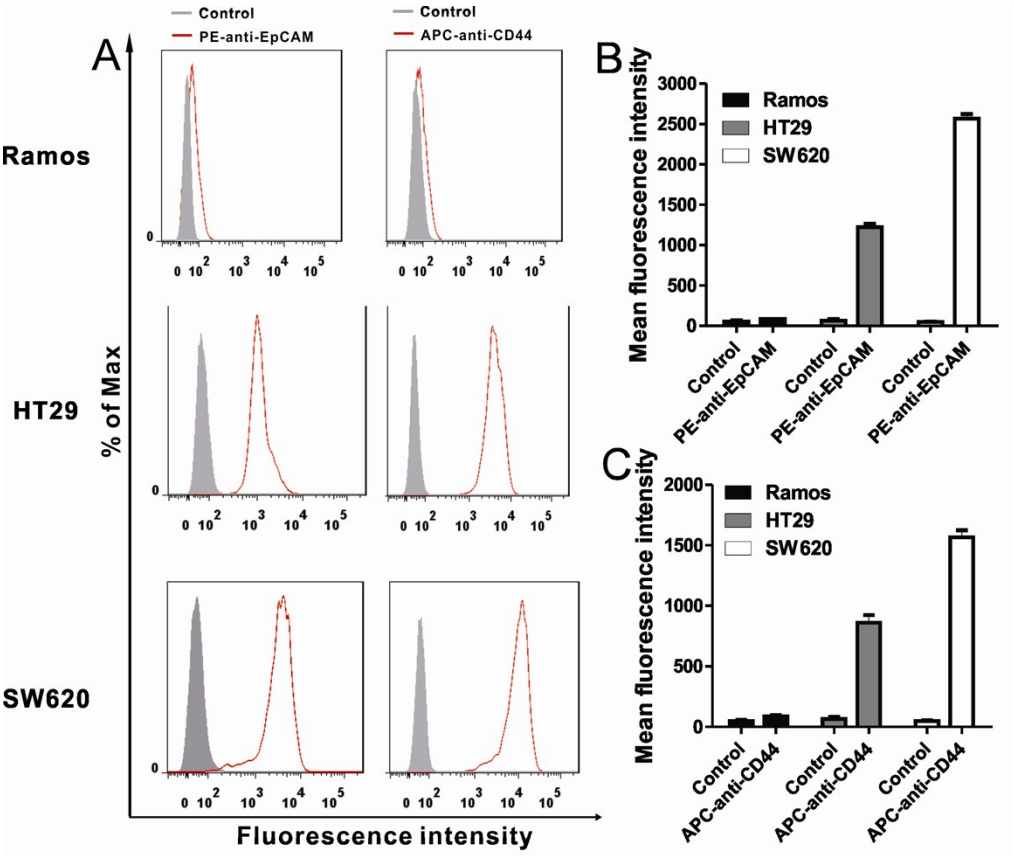

Fig. S1. The expression of EpCAM and CD44 on Ramos, SW620 and HT29 cells. Cells were incubated with PE-anti-EpCAM antibody (10 μg/mL) or APC-anti-CD44 antibody (10 μg/mL) for 1 h at 4 °C. EpCAM or CD44 expression on cell surface was determined using FACSAria flow cytometer. Cells incubated with PE mouse IgG1 kappa isotype control antibody, and APC mouse IgG1 kappa isotype control antibody were used as the isotype controls to normalize the fluorescence intensities. (A) Flow histogram of Ramos, HT-29, SW620 cells after incubation with PE-aE or APC-aCD44. (B) The quantitative analysis of the mean fluorescence intensities of PE-aE on HT-29, SW620 and Ramos cells. (C) The quantitative analysis of the mean fluorescence intensities of APC-aCD44 on HT-29, SW620 and Ramos cells.

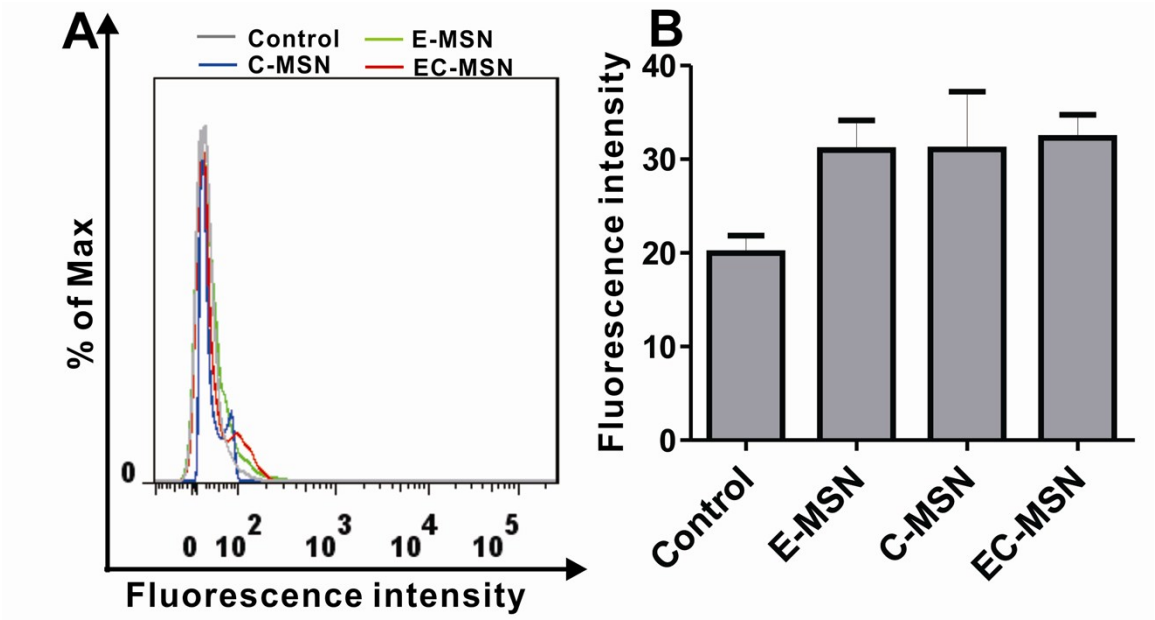

Fig. S2 Recognition of E-MSN, C-MSN, and EC-MSN by EpCAM and CD44 double-negative Ramos cells.

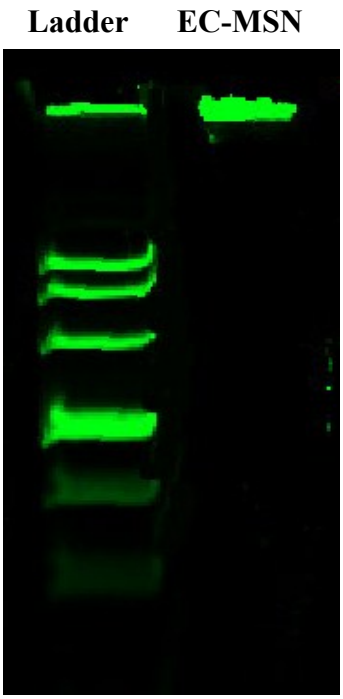

Fig. S3. The biostability of EC-MSN in blood. EC-MSN were incubated with blood at 37 ℃ under pH 7.4 for 8 h. Then the sample was centrifuged and washed three times with PBS, followed by subjecting to polyacrylamide gel electrophoresis analysis.

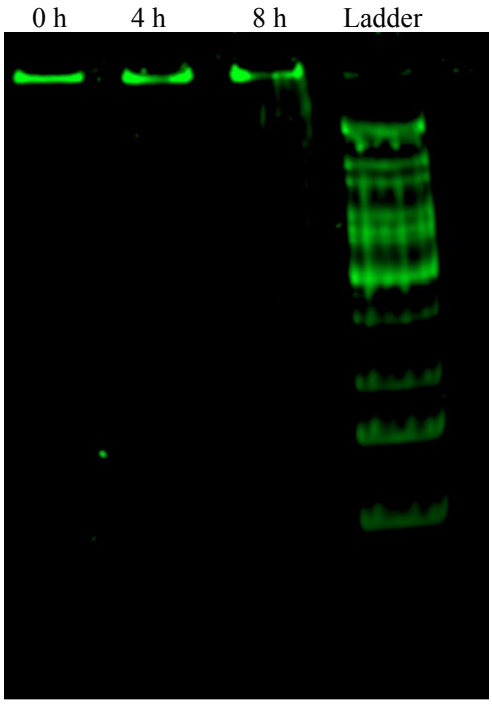

Fig. S4. The biostability of EC-MSN in serum-containing buffer solution. EC-MSN were incubated in 10% FBS-containing PBS solution at 37 °C under pH 7.4 for 4 h and 8 h. Then the sample was centrifuged and washed three times with PBS, followed by subjecting to polyacrylamide gel electrophoresis analysis.

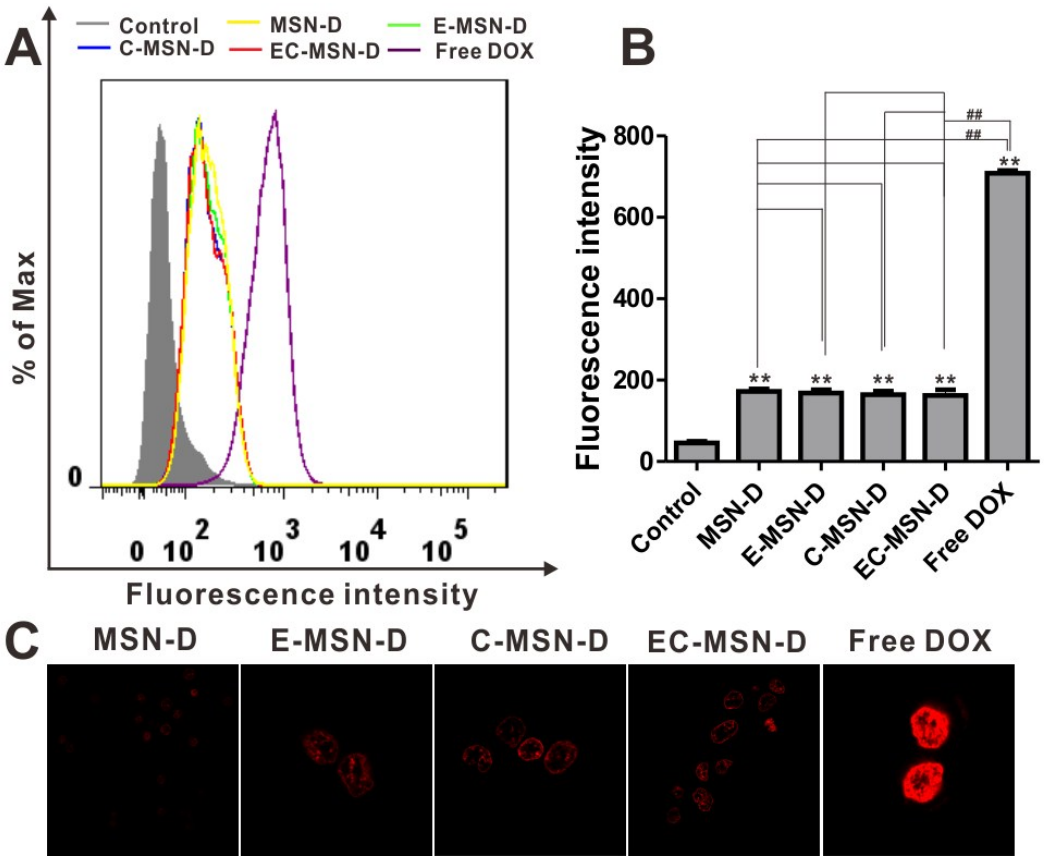

Fig. S5. In vitro drug uptake by Ramos cells. Cells were incubated with free DOX, MSN-D, E-MSN-D, C-MSN-D, or EC-MSN-D with DOX concentration of 5 μg/mL for 2 h at 37 ° C. (A) Flow histogram of Ramos cells after incubation with free DOX, MSN-D E-MSN-D, C-MSN-D, or EC-MSN-D. (B) The quantitative analysis of the cellular uptake efficiency of Ramos cells. (C) (D) Confocal images of Ramos cells treated with free DOX, MSN-D, E-MSN-D, C-MSN-D, or EC-MSN-D with DOX concentration of 5 μg/mL. **P < 0.01 compared with control group, and #P < 0.05, ##P < 0.01 compared with EC-MSN-D group by Student’s t test.