Electronic supplementary information

Simple and rapid colorimetric detection of melanoma circulating tumor cells with bifunctional magnetic nanoparticles

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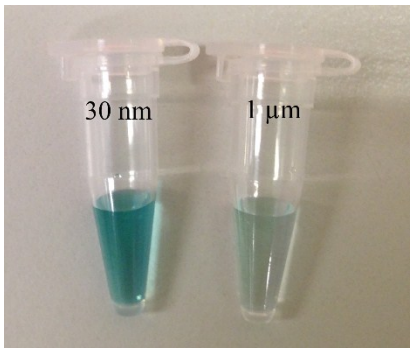

Fig. S1. Nanozyme activities of 30 nm and 1 µm magnetic nanoparticles, respectively.

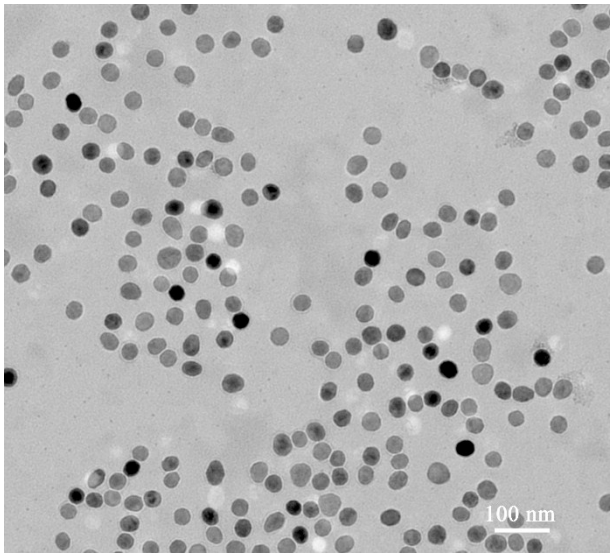

Fig. S2. TEM image of MNPs

Table S1. Capture efficiency and nonspecific binding from spiked cells in PBS solution

	Spiked	Detected 1	Detected 2	Detected 3	Average Recovery (%)	RSD (%)
LM-MEL-33	1000	673	771	662	70.20	6.00
MDA-MB-231	10000	360	260	233	2.84	0.67

$$\text{Capture efficiency} = \frac{Number\ of\ detected\ positive\ cells}{Number\ of\ spiked\ positive\ cells} \times 100\%$$

$$\text{Non-specific recovery} = \frac{Number\ of\ detected\ negative\ cells}{Number\ of\ spiked\ negative\ cells} \times 100\%$$

Positive cells: LM-MEL-33

Negative cells: MDA-MB-231

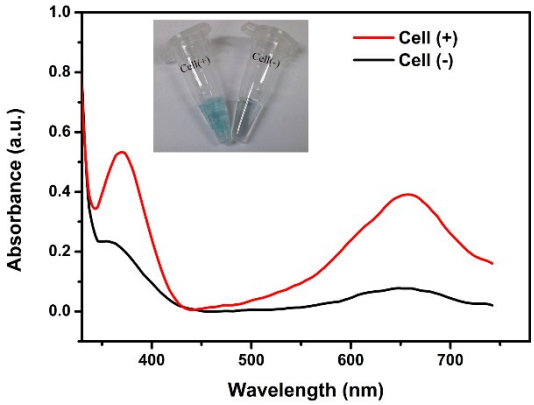

Fig. S3. Cells alone in catalyzing TMB in the presence of H_2O_2. Cell (+): 10^6 cell, Cell (-): 0 cell.

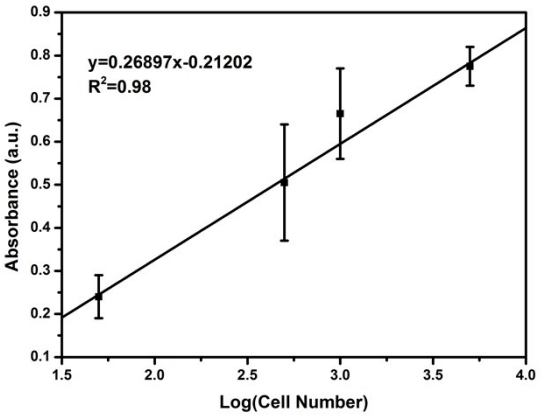

Fig. S4. The absorbance at 652 nm against natural logarithm over the different numbers of LM-MEL-33 cells in 7.5 mL of blood samples.