Supporting Information

Cascade nanozymes based on "butterfly effect" for enhanced starvation therapy via autophagy regulation strategy

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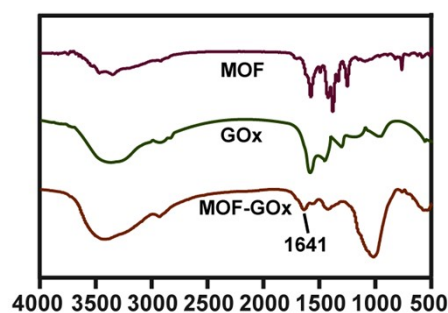
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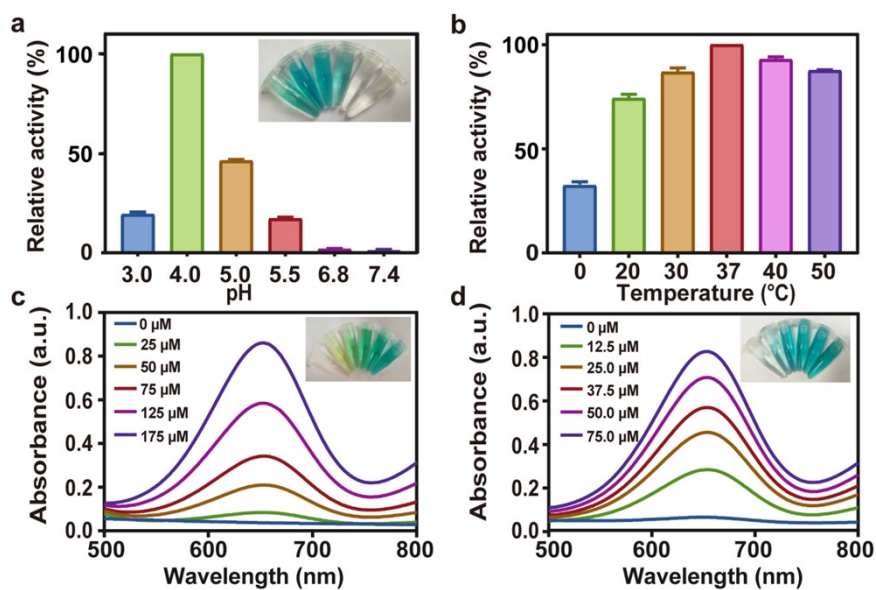E-mail: dubinpaper@sina.com (Bin Du)
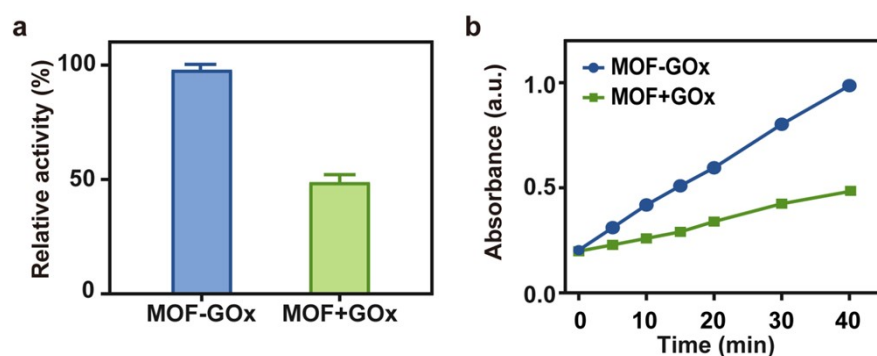
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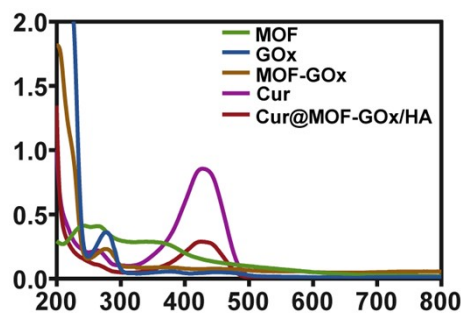
**Fig. S1** UV-vis absorption spectra of different preparations.

**Fig. S2** FTIR spectra of different preparations.

Fig. S3 Peroxidase relative activity of MOF at different conditions (a) different pH, (b) different temperature, (c) different concentration of TMB, (d) different concentration of H_2O_2 (n = 3).

Fig. S4 Activity comparison results of free enzyme and integrated enzyme. (a) Relative activity of cascade reaction for MOF-GOx and MOF + GOx, (b) Time-absorbance curve of MOF + GOx and MOF-GOx ($n = 3$).
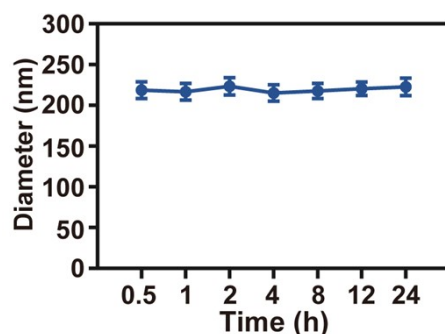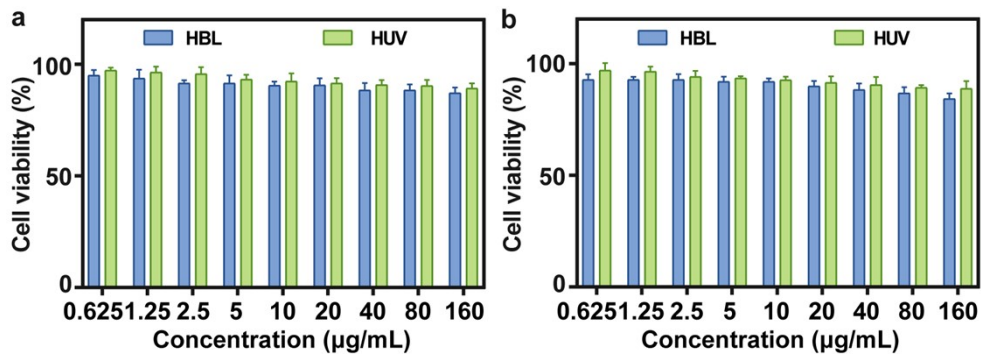

Fig. S5 The particle size of Cur@MOF-GOx/HA dissolved in FBS medium for 24 h. ($n = 3$).
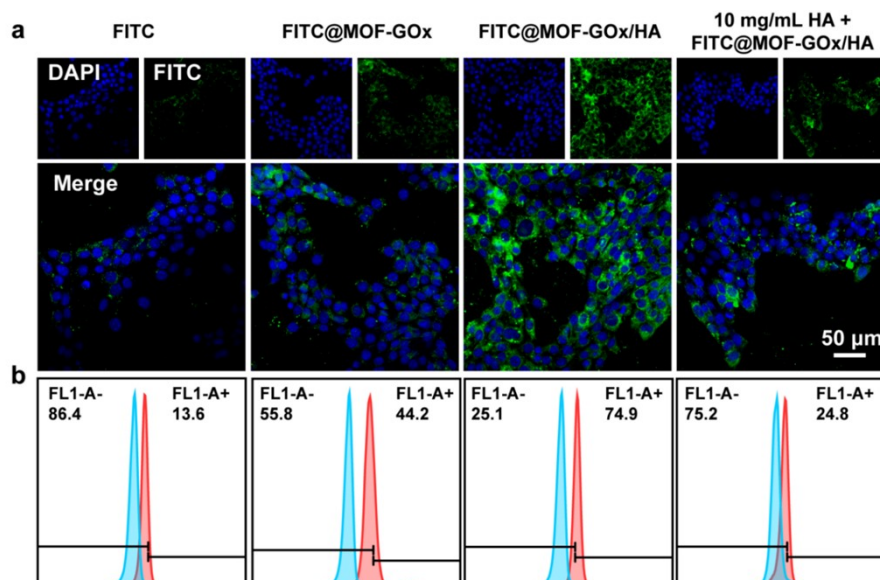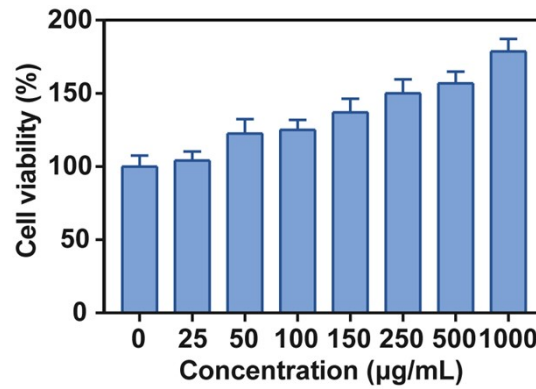

Fig. S6 Cellular uptake of FITC, FITC@MOF-GOx, FITC@MOF-GOx/HA and FITC@MOF-GOx/HA preincubation with HA in 4T1 cells. (a) CLSM image, (b) Flow cytometric analysis.
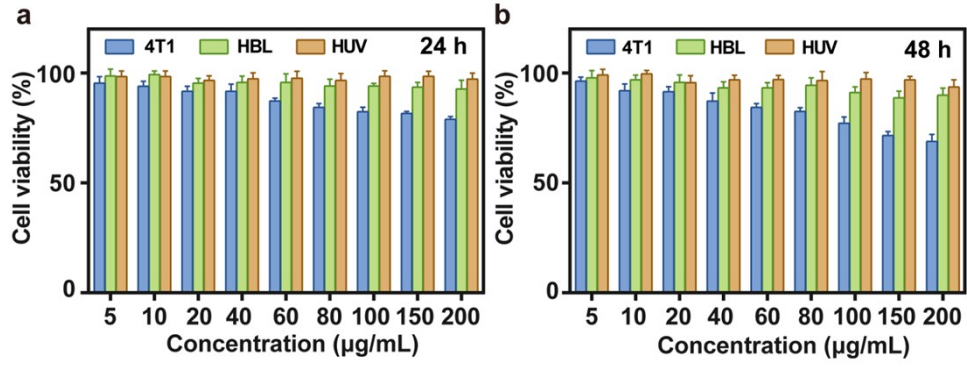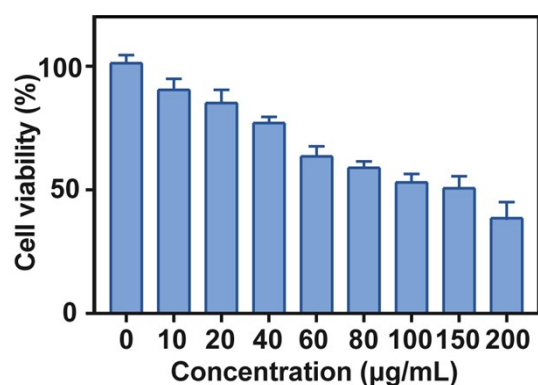
**Fig. S7** Cell viability of different cells incubated with MOF-HA for (a) 24 h and (b) 48 h (n = 6).

Fig. S8 Cell viability of different cells incubated with Cur@MOF-GOx/HA for (a) 24 h and (b) 48 h (n = 6).


Fig. S9 Cell viability of 4T1 cells treated with Cur@MOF-GOx/HA and different concentrations of glucose (the cells only treated with Cur@MOF-GOx/HA was set as 100%) (n = 6).
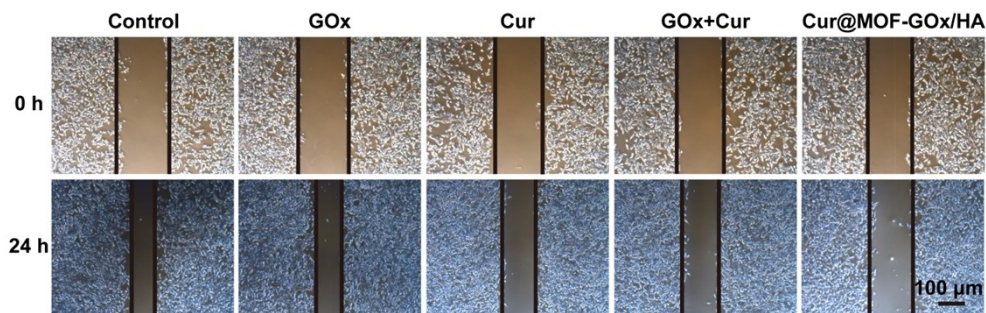
Fig. S10 Cell viability of 4T1 cells treated with Cur@MOF-GOx/HA and different concentrations of H_2O_2 (the concentration of H_2O_2 was 0 was set as 100%) ($n = 6$).
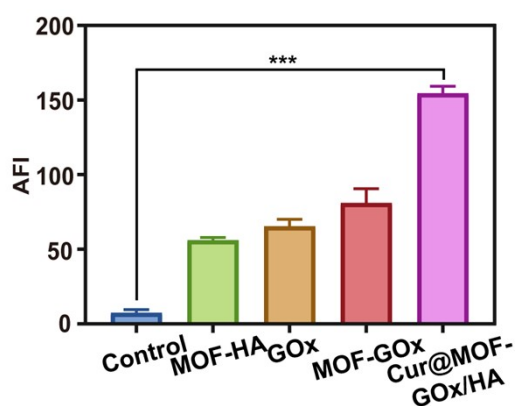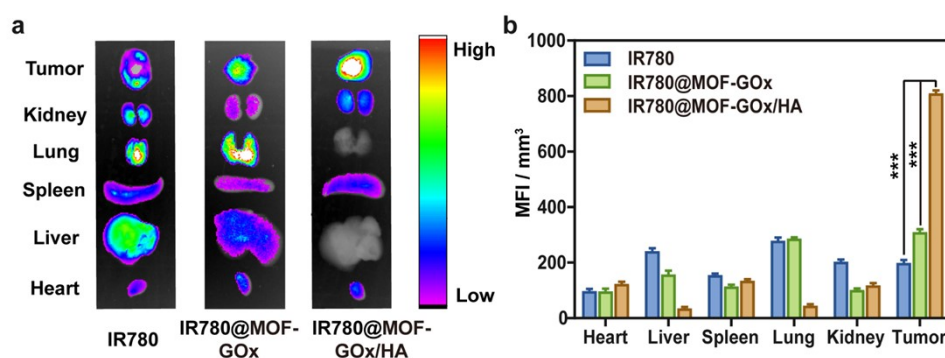

Fig. S11 Average fluorescence intensity of ROS with different treatments ($n = 3$, ***$P < 0.001$).
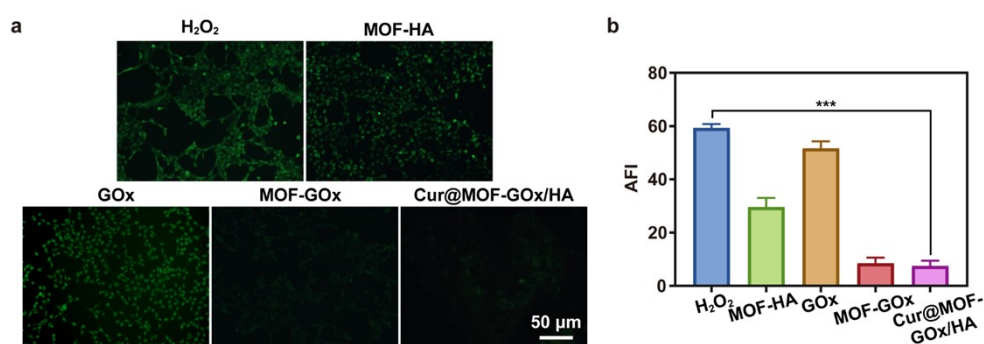
**Fig. S12** The fluorescence image of H_2O_2 with different treatments and average fluorescence density of H_2O_2 ($n = 3$, ***$P < 0.001$).
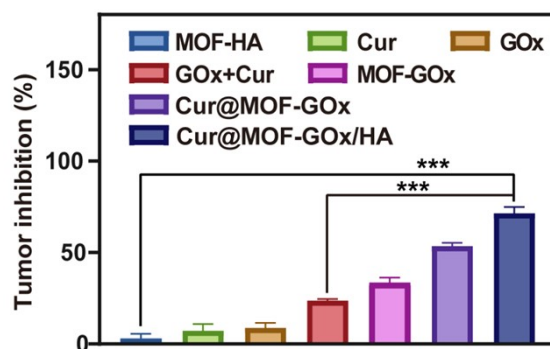
Fig. S13 Migration of 4T1 cells with different treatments.

Fig. S14 Fluorescence distribution and statistical value of fluorescence intensity in each tissue of tumor-bearing mice. (a) Fluorescence images of dissected tissues at 12 h. (b) Fluorescence quantitative analysis of dissected tissues ($n = 3$).
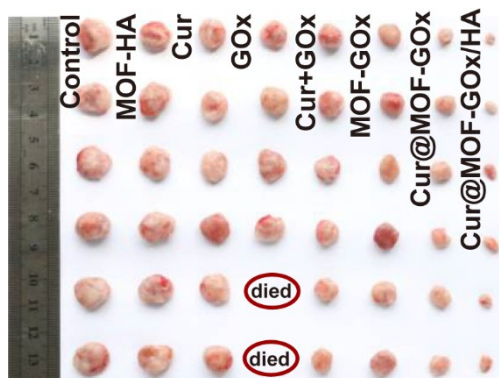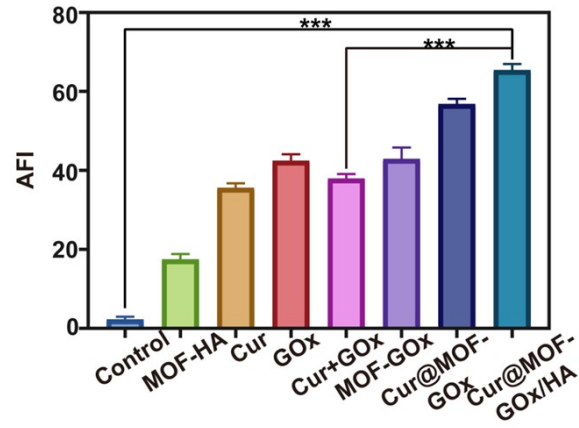

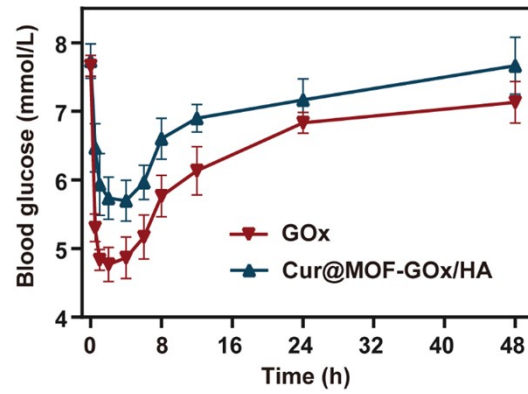**Fig. S15** Photograph of isolated tumor after treatment.

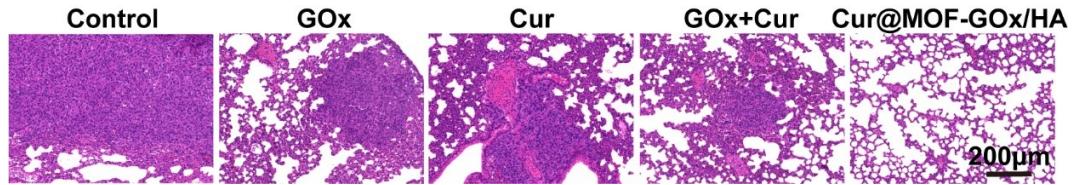**Fig. S16** Tumor weight inhibition rate ($n = 6$, ***$P < 0.001$).

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Fig. S17 Average fluorescence intensity of TUNEL staining ($n = 3$, ***$P < 0.001$).

Fig. S18 Blood glucose level measurement after different treatments ($n = 3$).

Fig. S19 H&E staining results of lung tissues.