Electronic Supplementary Material (ESI) for Materials Horizons.

Supporting Information

Polarity Control of DNA Adsorption Enabling Surface Functionalization of CuO Nanozyme for Targeted Tumor Therapy

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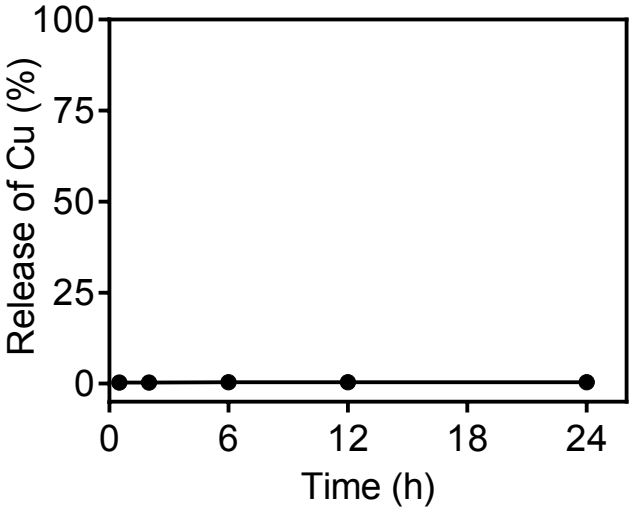

Figure S1. The release kinetics of Cu ions from CuO NPs.

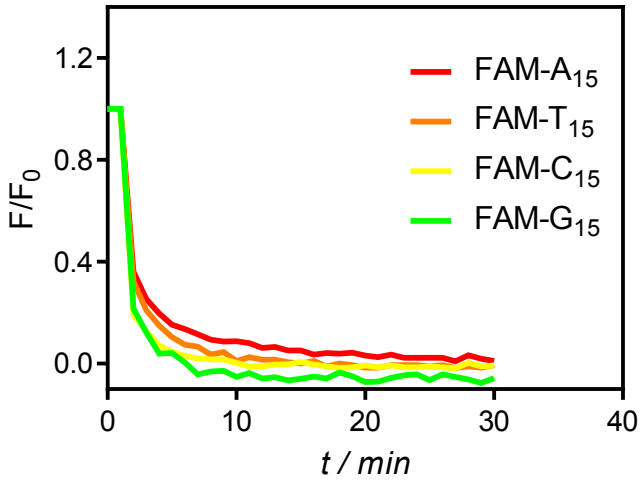

Figure S2. The adsorption of FAM-labeled 15-mer DNA homo-polymers (20 nM) by 50 μg/mL CuO NPs in HEPES buffer (10 mM, pH 7.6, 150 mM NaCl).

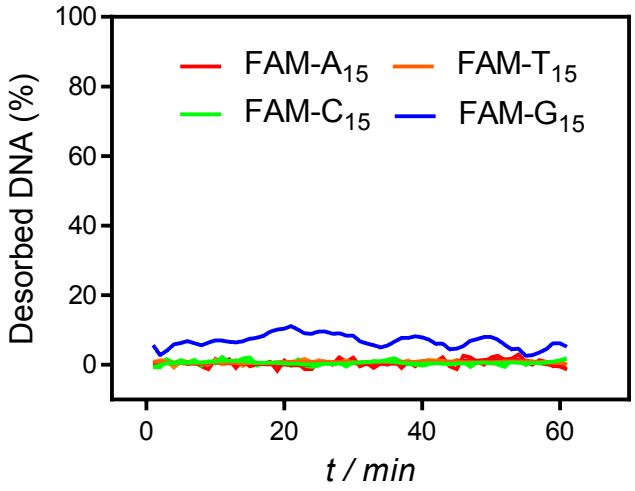

Figure S3. DNA desorption kinetics from CuO NPs surface in presence of 500 mM NaCl.

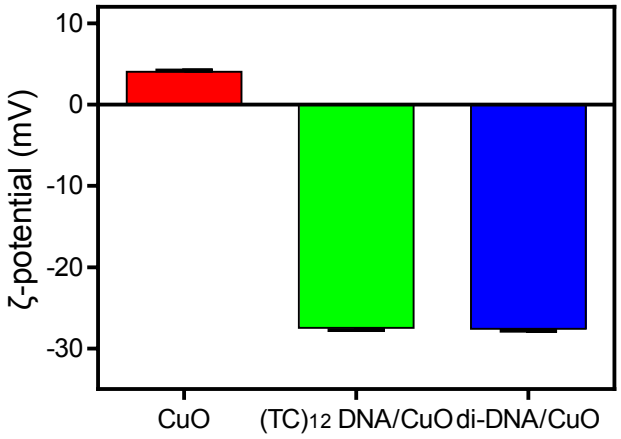

Figure S4. The ζ potential of CuO NPs, $(TC)_{12}$ DNA/CuO and di-DNA/CuO.

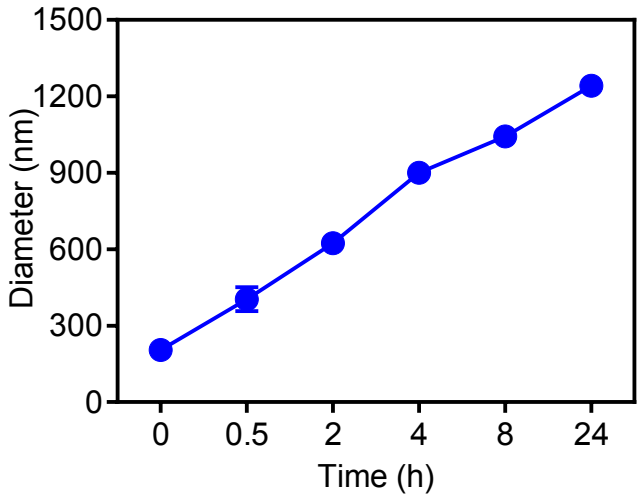

Figure S5. Colloidal stability of bare CuO NPs in water.

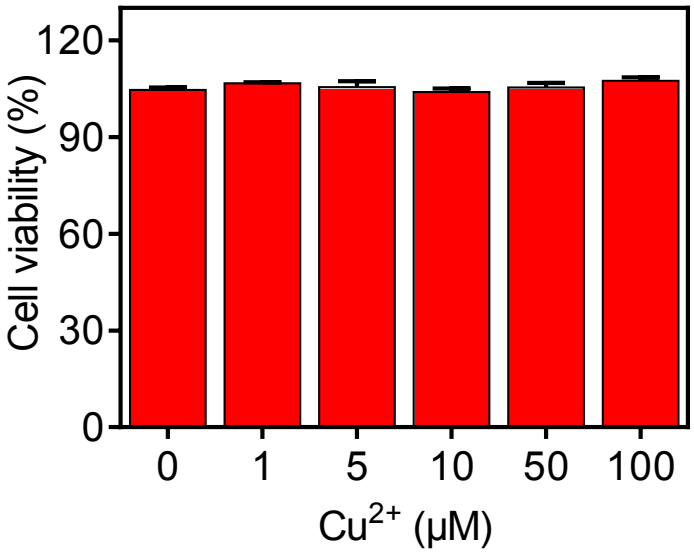

Figure S6. Cell viability of MDA-MB-231 cells after incubation with different Cu^{2+} concentrations for 24 h.

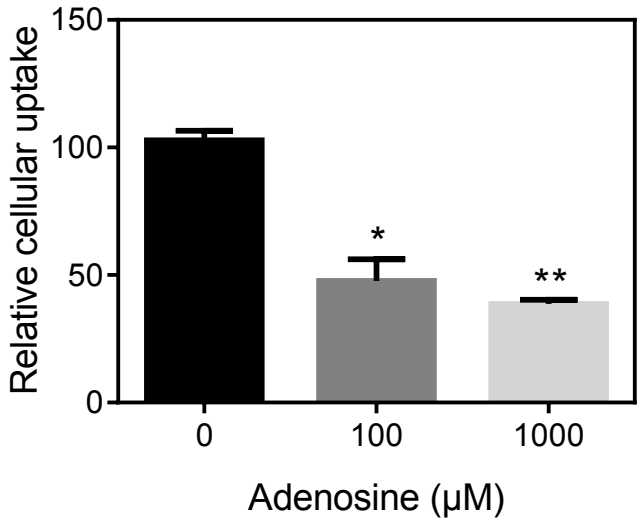

Figure S7. The cellular uptake of di-DNA/CuO by MDA-MB-231 cells without or with pretreatment of different concentrations of free adenosine. *$P < 0.05$, **$P < 0.01$.

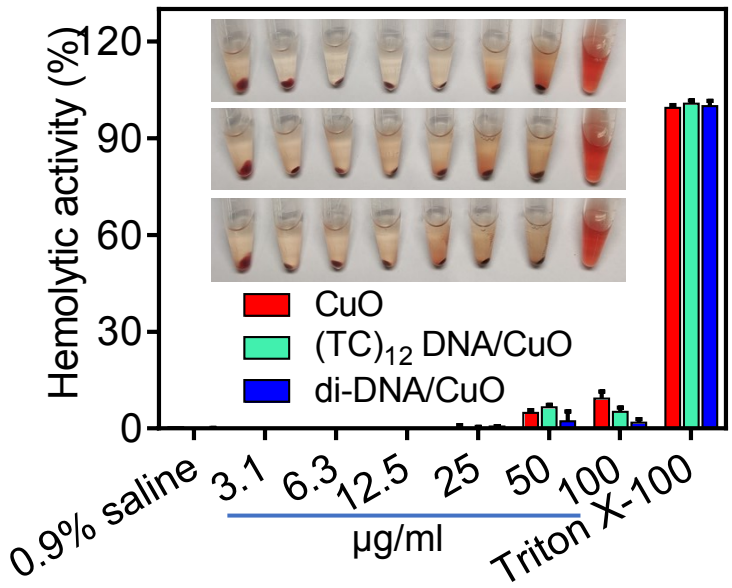

Figure S8. Hemolysis test of CuO, $(TC)_{12}$ DNA/CuO and di-DNA/CuO at different concentrations. Negative control and positive control were 0.9% saline and Triton X-100,

respectively. All these formulations showed minimal hemolysis as compared to the positive control, demonstrating the biosafety of the nano-systems for intravenous injection.

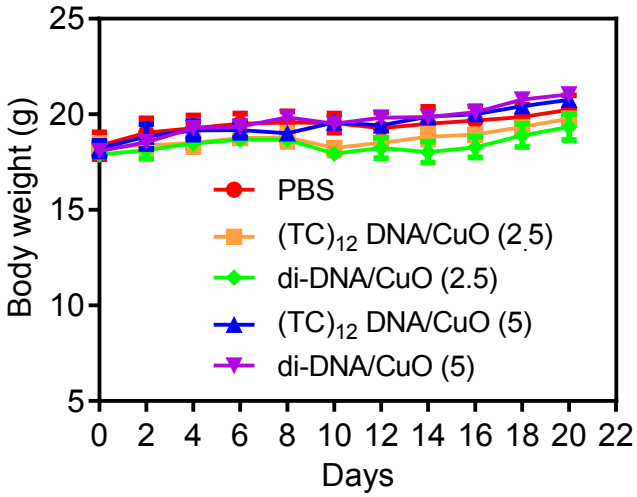

Figure S9. Dynamic monitoring the body weight for 20 days with different treatments.

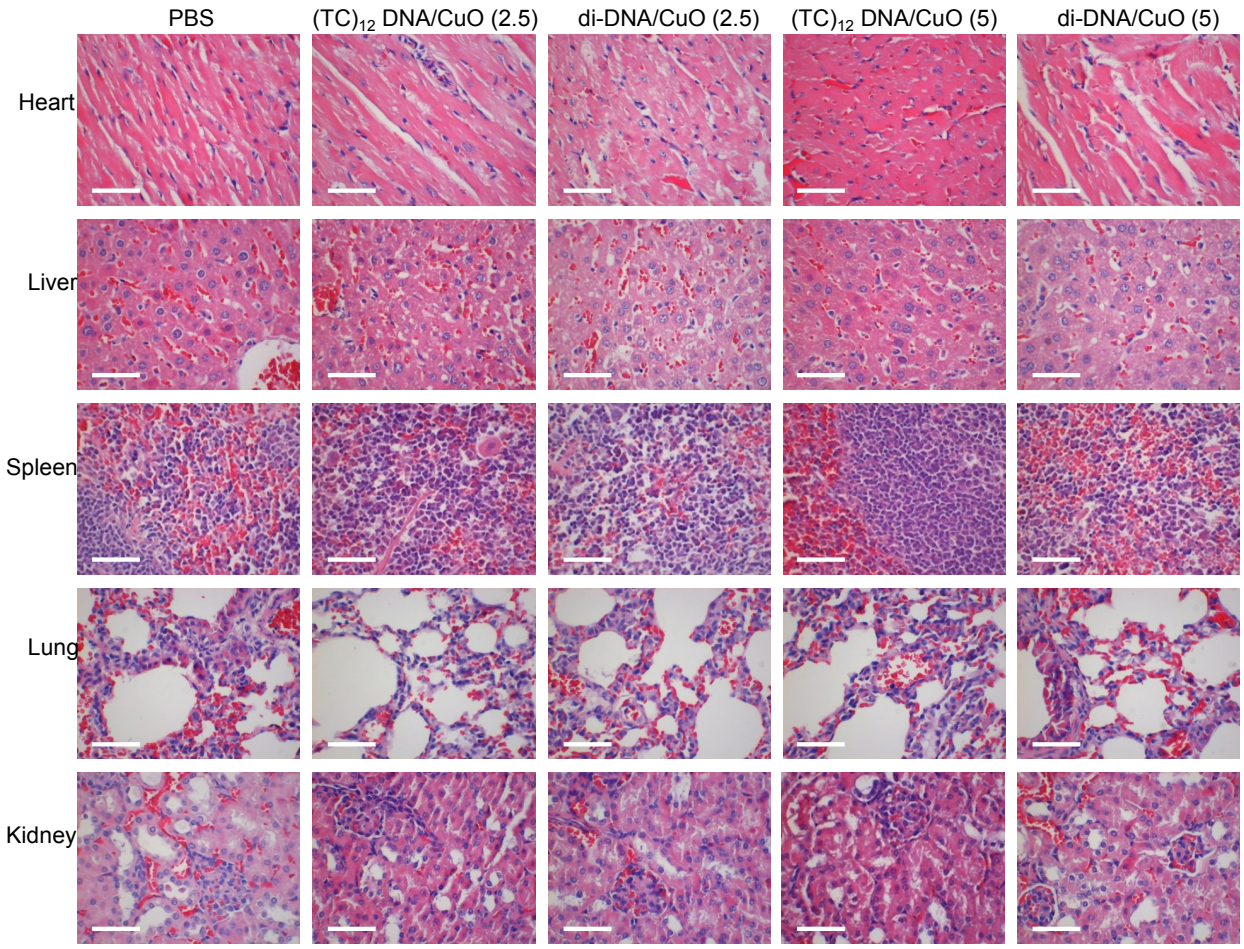

Figure S10. Representative H&E staining images of main organs (heart, liver, spleen, lung and kidney) after the treatments, scale bar = 50 μm.