Electronic Supplementary Material (ESI) for Journal of Materials Chemistry B.

Supporting Information

Time-lapse live cell imaging to monitor doxorubicin release from DNA origami nanostructures

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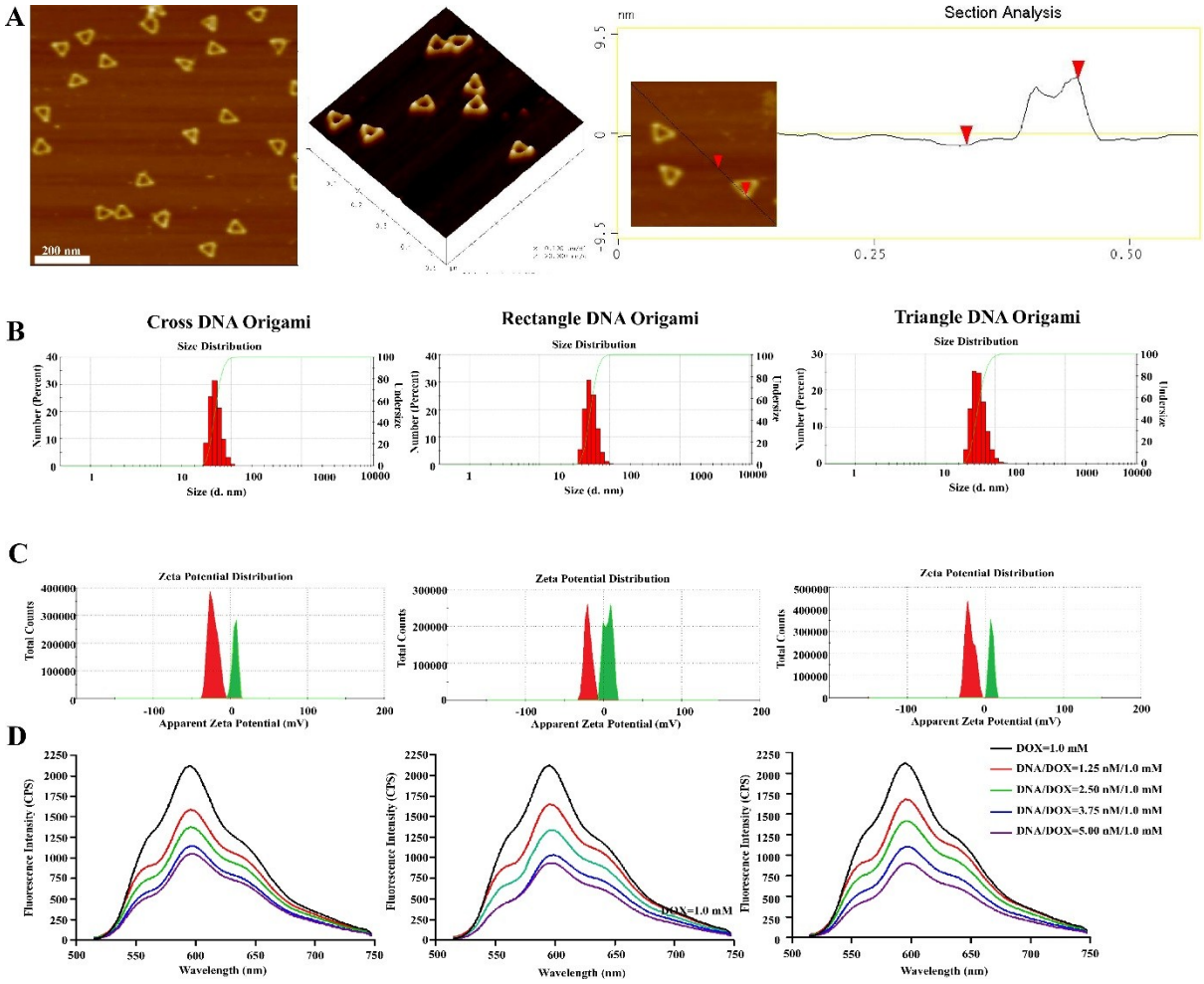


Figure S1. Characterization of DNA origami nanocarriers before and after DOX-loading. (A) AFM image (right), 3D image (middle), and height analysis (right) of DNA origami triangle. The height is ~ 6. 2 nm. (B) Size distribution of three shapes of DNA origami before DOX loading. (C) zeta-potential of DNA origami nanocarriers before (red) and after DOX loading (green). (D) The fluorescence spectra of DOX (1.0 mM) with a different concentration of DNA origami nanocarriers (0 to 5 nM).

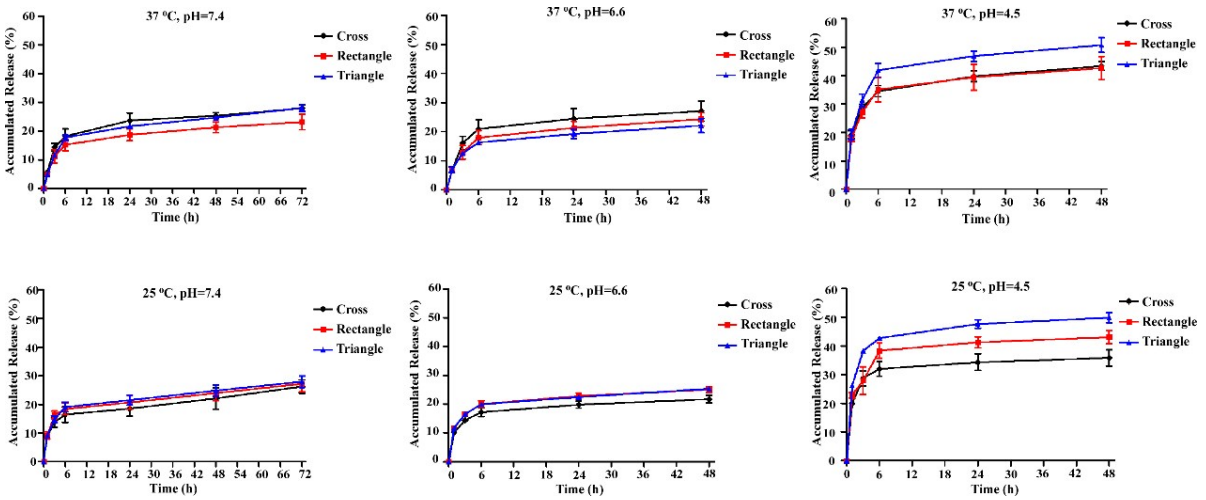


Figure S2. DOX release profile from three different shapes of DNA origami (DOX incubation at 25 °C and 37 °C, respectively. The pH values were set as 7.4, 6.6, and 4.5. The accumulated release showed that the DNA origami was acidic triggered release.

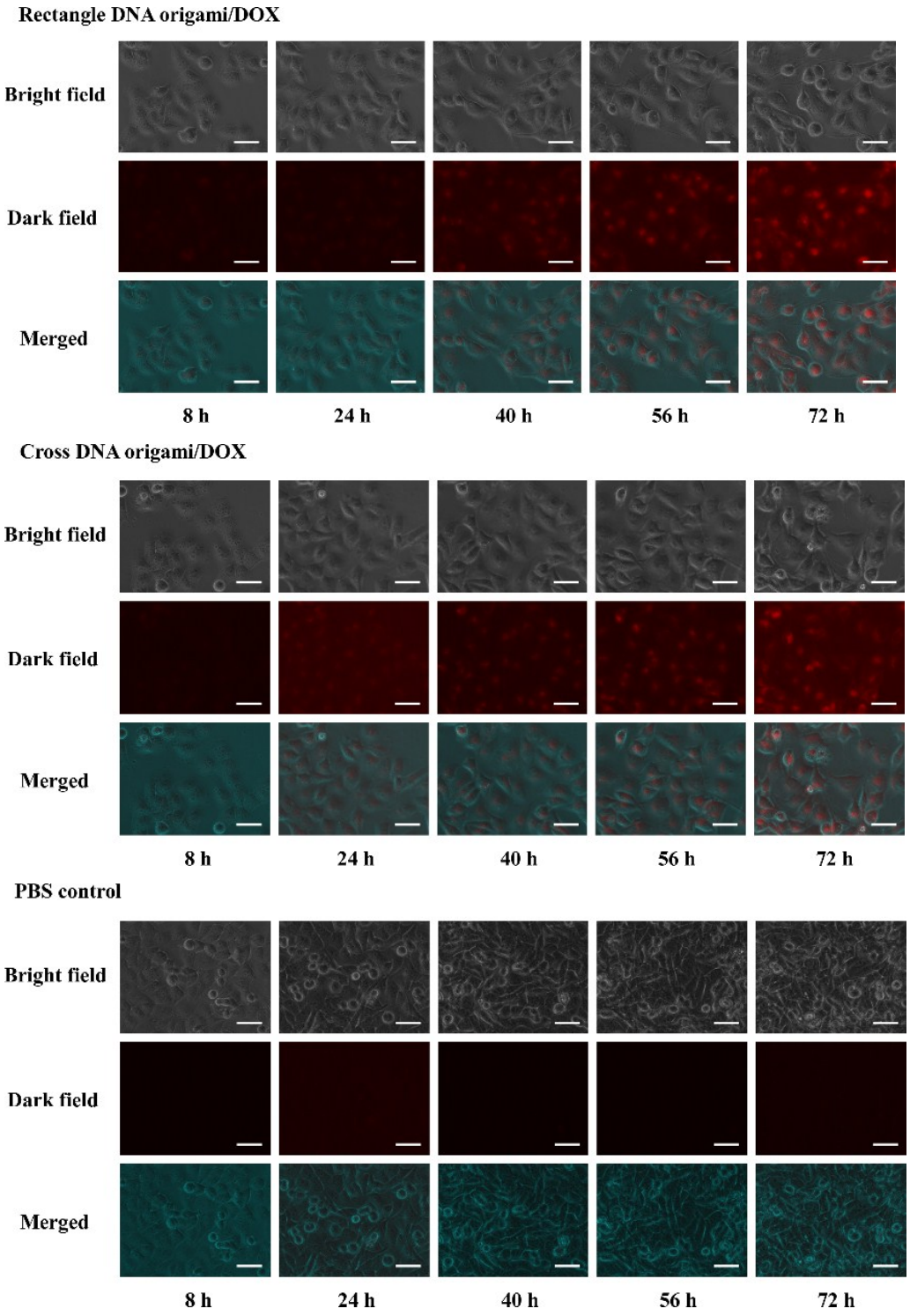
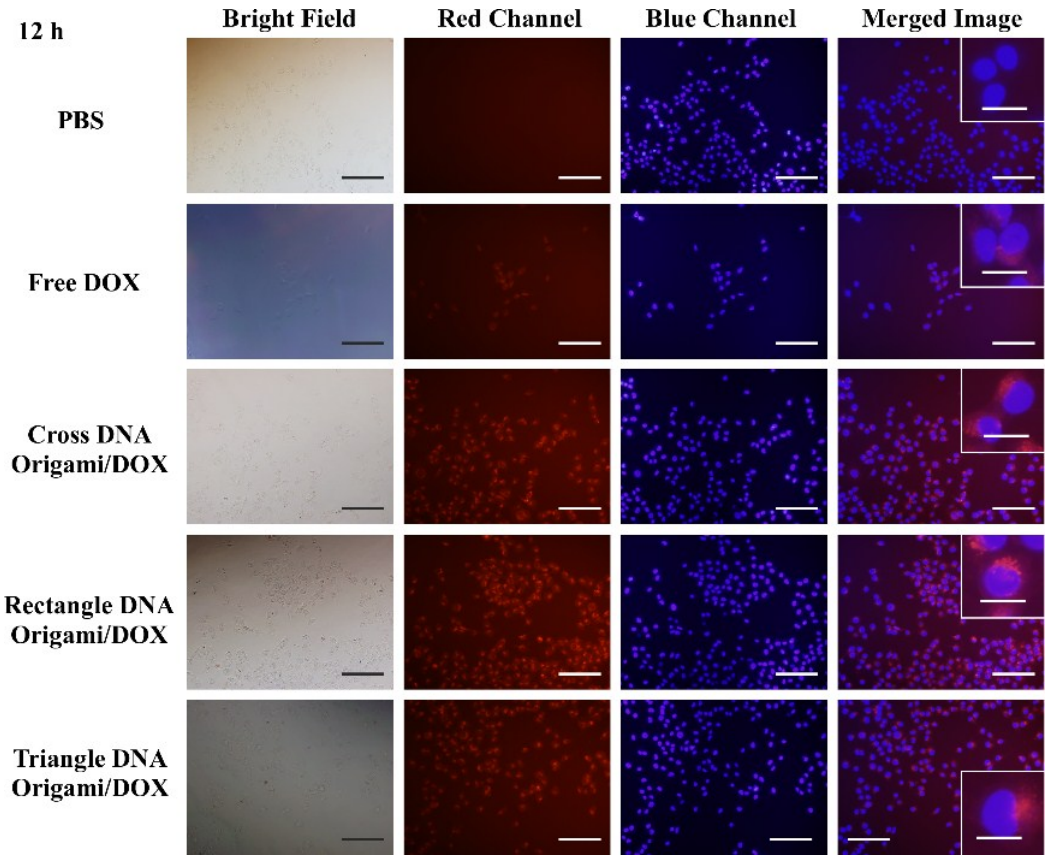
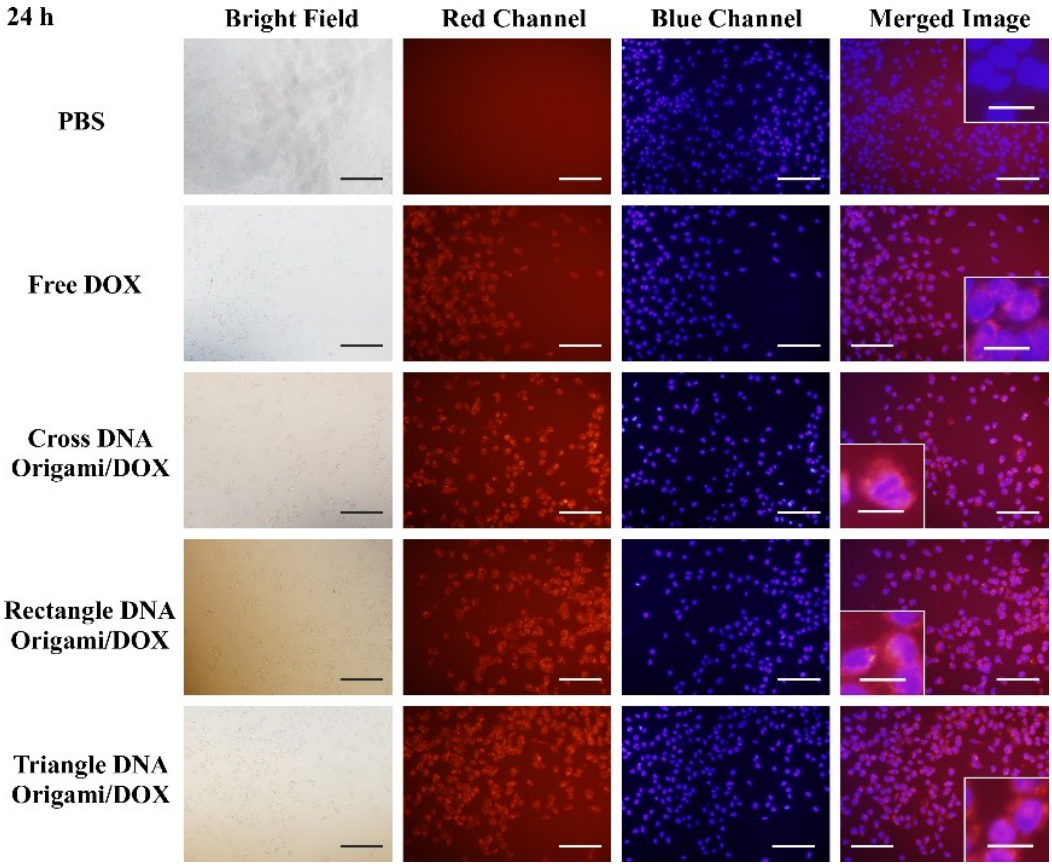
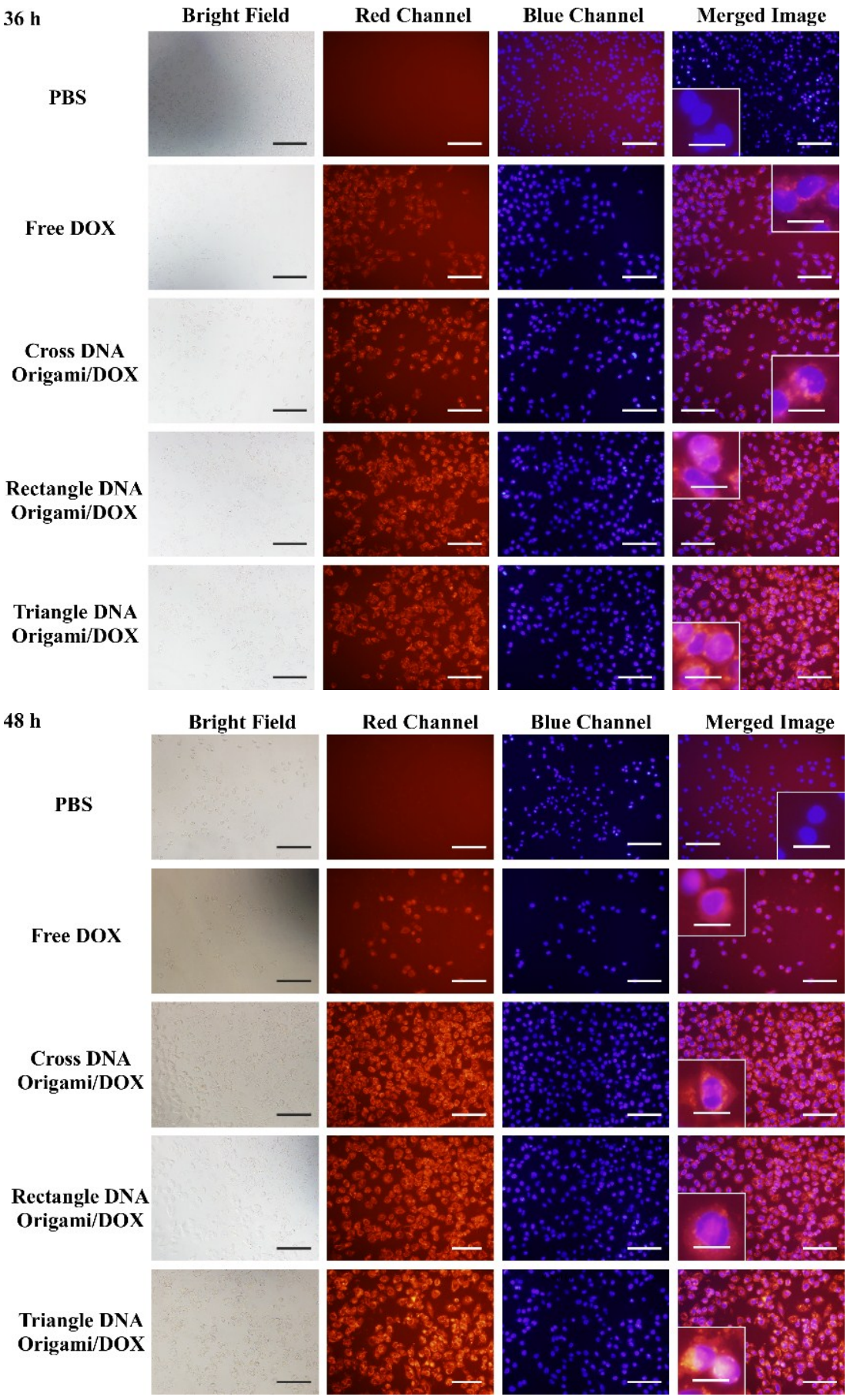


Figure S3. *In vitro* time-lapse live cell imaging of DOX-loaded 2D rectangular DNA origami and 2D cross-shaped DNA origami and PBS buffer by using the EVOS cell imaging system. Image was captured every 20 mins, and the picked time point was shown at 8, 24, 40, 56, and 72 h, respectively. The bright field, dark field, and merged images are illustrated. Scale bar: 20 μm.


12 h
Bright Field
Red Channel
Blue Channel
Merged Image
PBS
Free DOX
Cross DNA Origami/DOX
Rectangle DNA Origami/DOX
Triangle DNA Origami/DOX


24 h
Bright Field
Red Channel
Blue Channel
Merged Image
PBS
Free DOX
Cross DNA Origami/DOX
Rectangle DNA Origami/DOX
Triangle DNA Origami/DOX


36 h
Bright Field
Red Channel
Blue Channel
Merged Image
PBS
Free DOX
Cross DNA Origami/DOX
Rectangle DNA Origami/DOX
Triangle DNA Origami/DOX
48 h
Bright Field
Red Channel
Blue Channel
Merged Image
PBS
Free DOX
Cross DNA Origami/DOX
Rectangle DNA Origami/DOX
Triangle DNA Origami/DOX

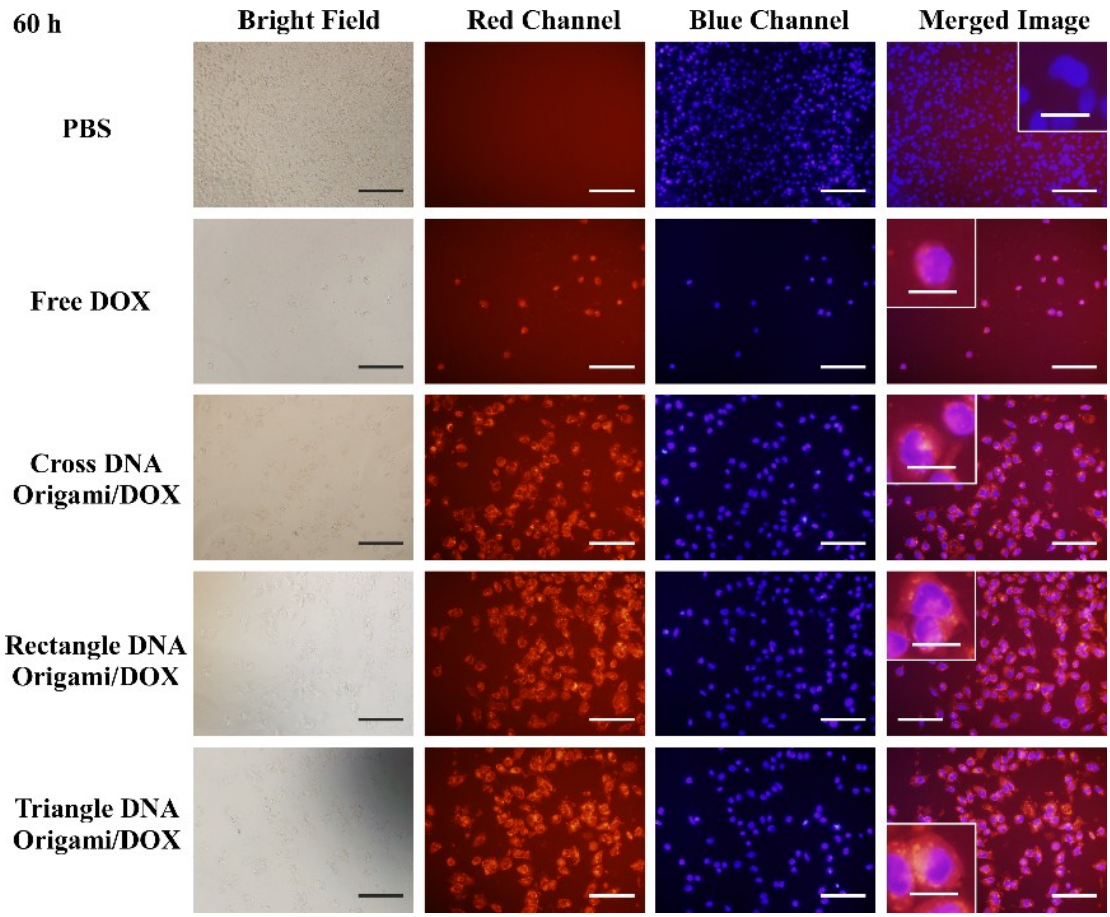


Figure S4. Bright-field and fluorescence images of DAPI stained MDA-MB-231 cells treated with the same concentration of DOX-loaded DNA origami and free DOX for 12, 24, 36, 48, and 60 h. The red fluorescence of DOX was captured in red channel and DAPI stained nuclei was captured in blue channel. The merged images demonstrate the co-localization of DOX and nuclei, indicating the diffusion of DOX into nuclei and accumulation. (PBS was used as the negative control.) Scale bar: 100 μm, scale bar in zoomed area: 20 μm.