

*Supporting information*

for

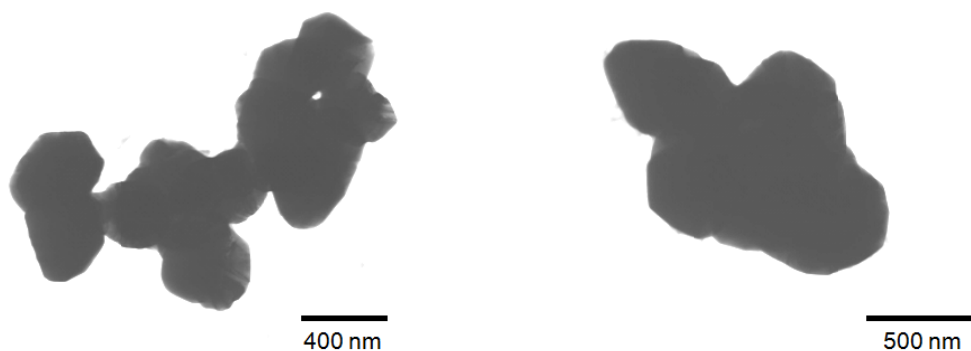
**DNA-templated plasmonic Ag/AgCl nanostructures for  
molecular selective photocatalysis and photocatalytic  
inactivation of cancer cells**

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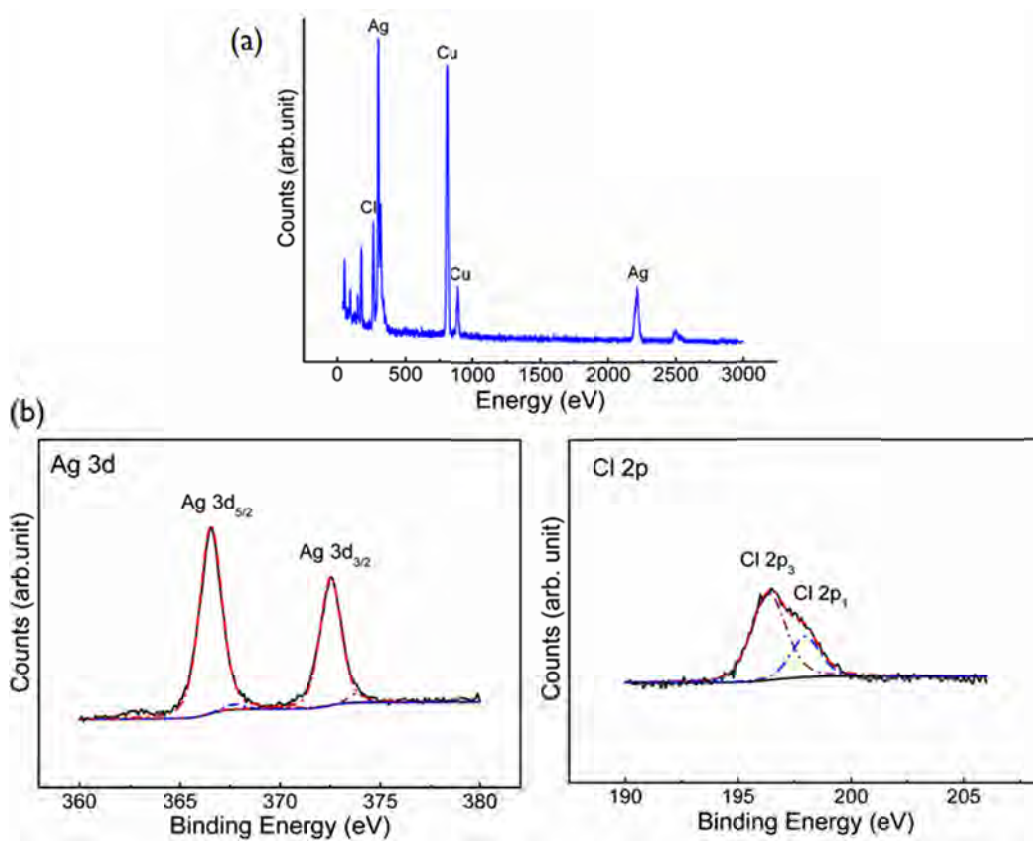
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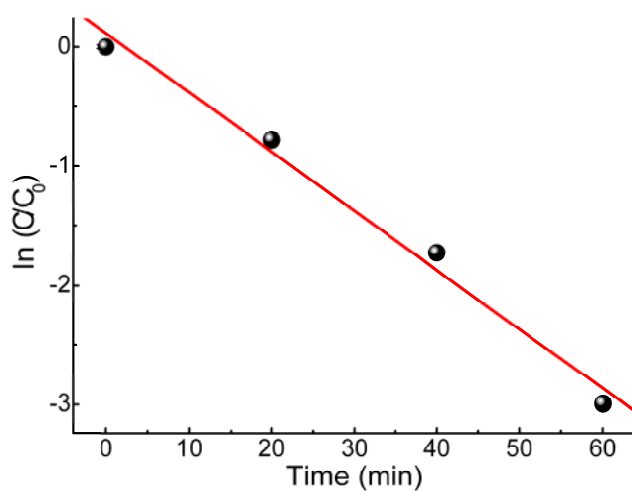
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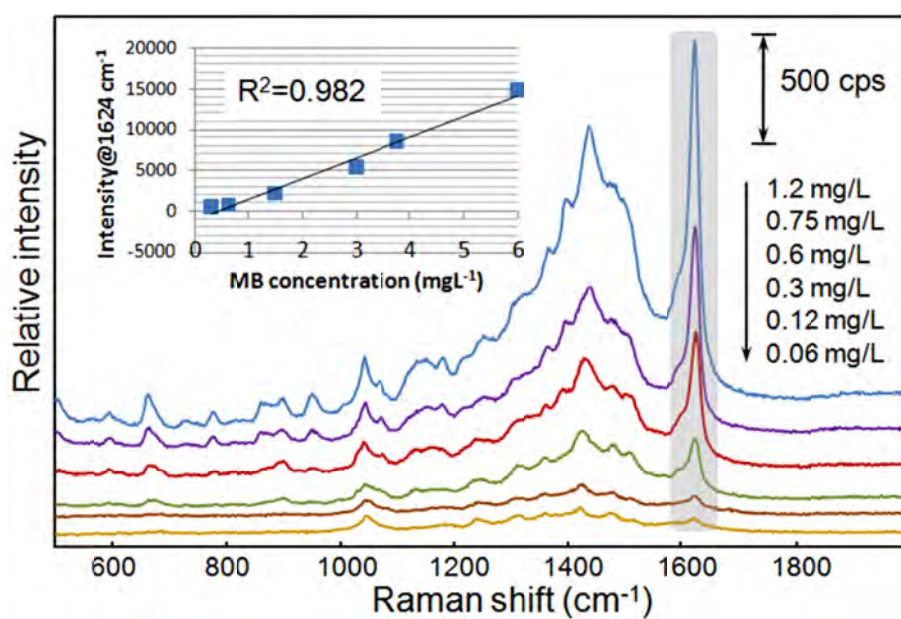
**Fig. S1.** Representative transmission mode STEM images of AgCl crystals before UV irradiation.



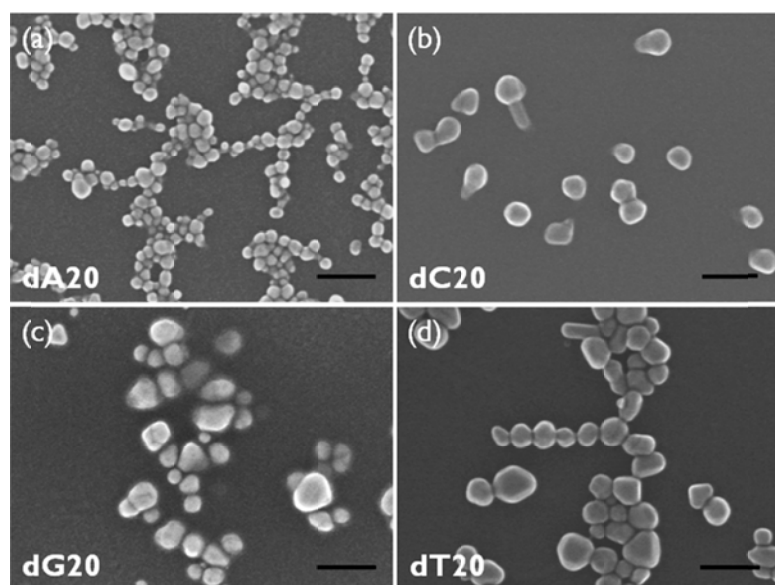
**Fig. S2.** EDS (a) and XPS (b) characterization for the Ag/AgCl nanostructures obtained after UV irradiation for 75 s. All XPS spectra shown (b) were calibrated with the C1s peak at 284.2 eV



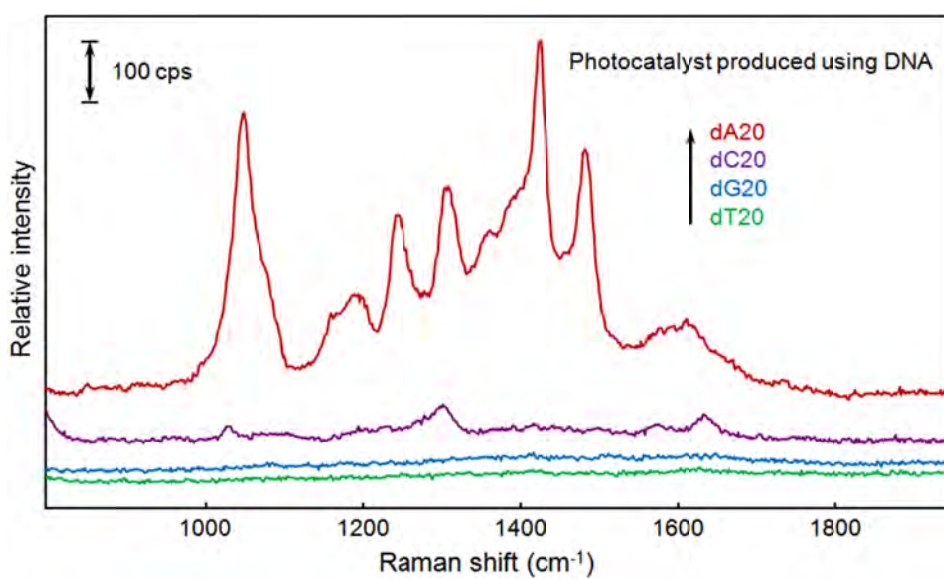
**Fig. S3.** Plots of  $\ln \frac{C}{C_0}$  as a function of reaction time for the MB photodecomposition reaction. The reaction rate constant was determined to be  $0.050 \text{ min}^{-1}$ .



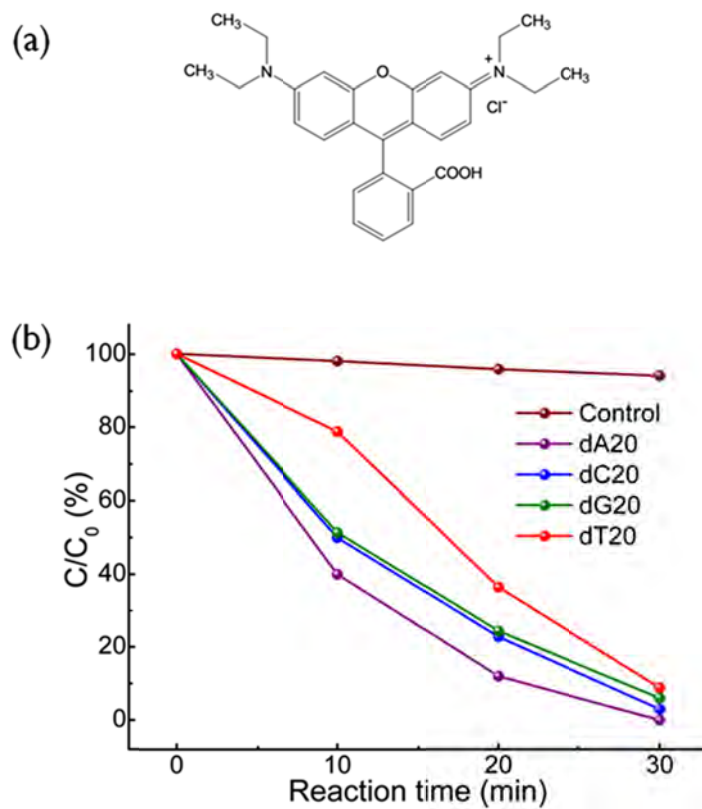
**Fig. S4.** SERS spectra of methylene blue (MB) at various known concentrations in the presence of DNA-encapsulated nanophotocatalyst. Insert shows the standard linear calibration curve made by plotting known final concentrations of MB against SERS band intensities at  $1624 \text{ cm}^{-1}$ .



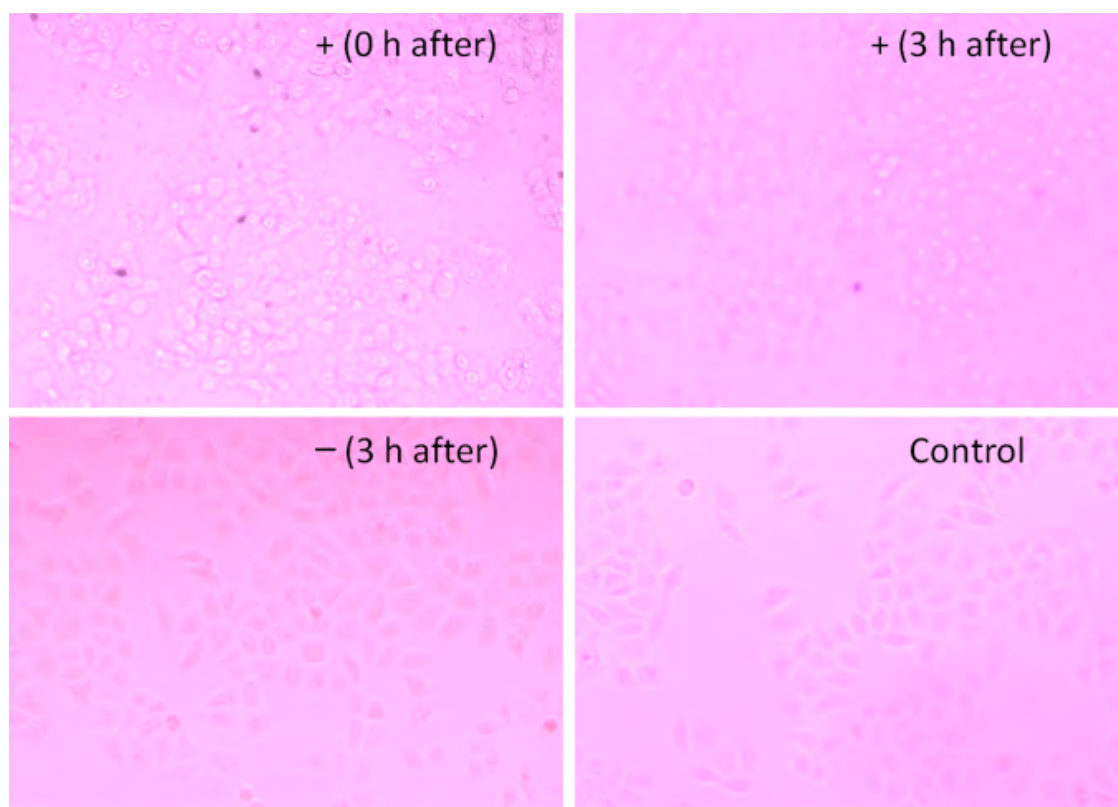
**Fig. S5.** Representative Scanning mode STEM images of various Ag/AgCl nanostructures produced through UV irradiation for 75 s using different DNA sequences. Scale bar: 100 nm.



**Fig. S6.** SERS spectral comparison among the Ag/AgCl nanostructures prepared using different DNA sequences.



**Fig. S7.** Normalized concentration of RhB as functions of reaction time during photocatalysis with different photocatalysts.



**Fig. S8.** Representative bright field images of the HeLa cell obtained 0 h and 3 h after photocatalytic treatment, respectively. The images of cells obtained 3 h after treatment with PBS and photoirradiation (-) and the cells without any treatment (control) are shown for references.