Electronic Supplementary Material (ESI) for RSC Advances

Supporting information

Unraveling the mode of binding of the anticancer drug, topotecan with dsDNA

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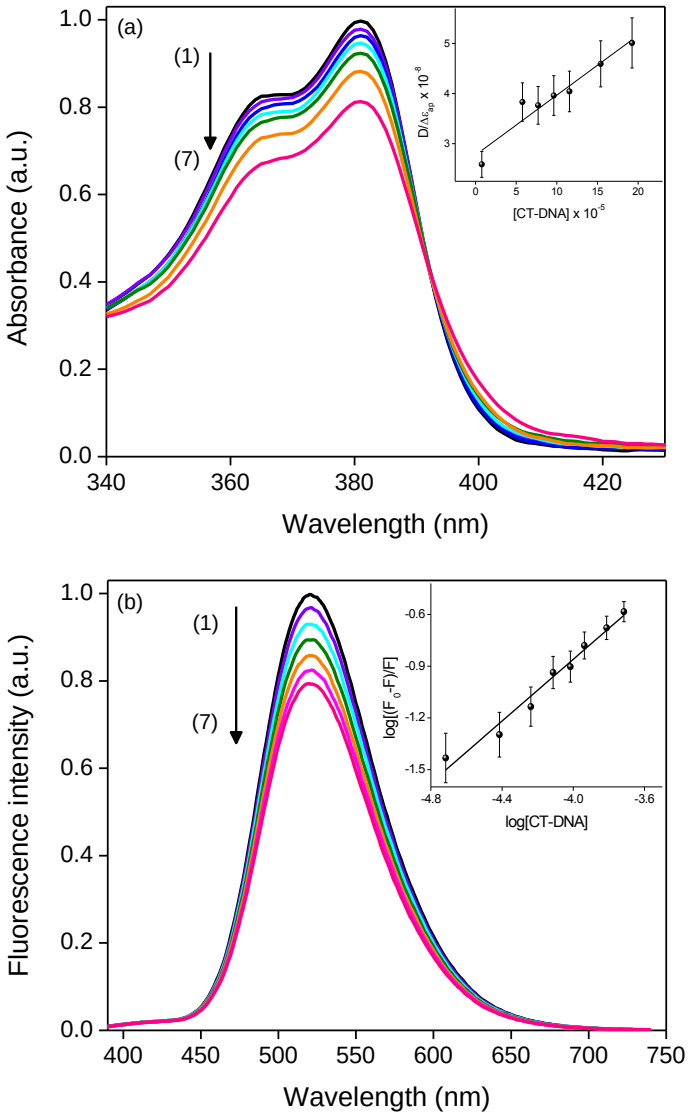

Figure S1. (a) Absorption and (b) fluorescence spectra of TPT (20 μM) in absence and presence of CT-DNA. 1→7 represents CT-DNA concentrations 0, 5, 10, 20, 40, 80 and 100 μM, respectively.

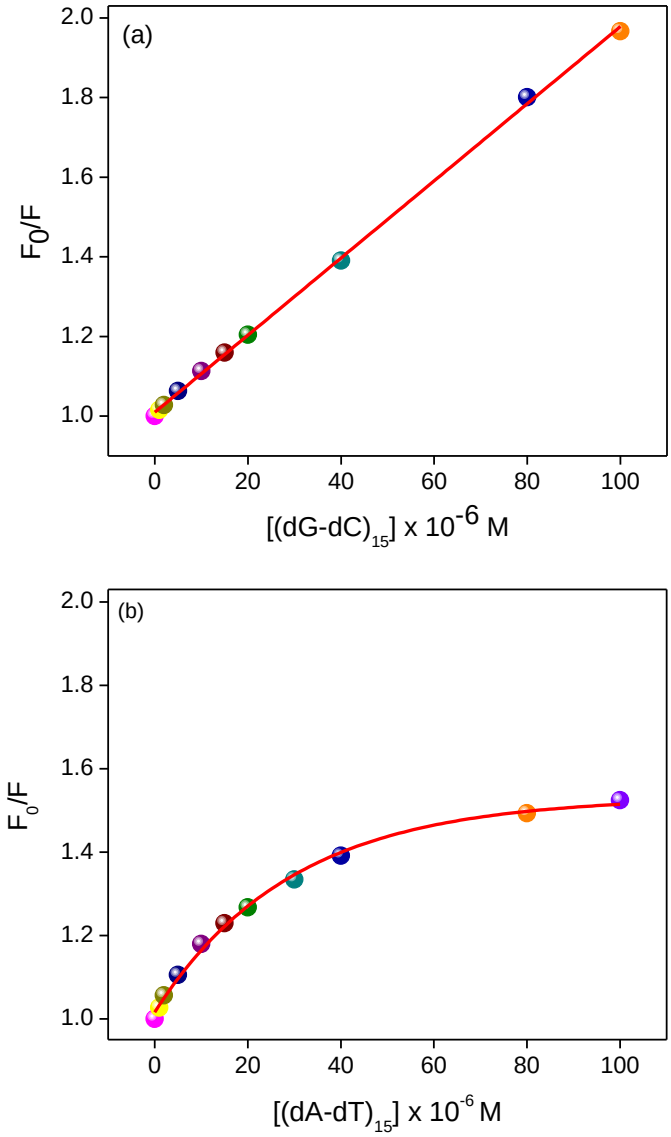

Figure S2. Stern-Volmer plots for TPT quenching in presence of (a) $(dG\text{-}dC)_{15}$ and (b) $(dA\text{-}dT)_{15}$.

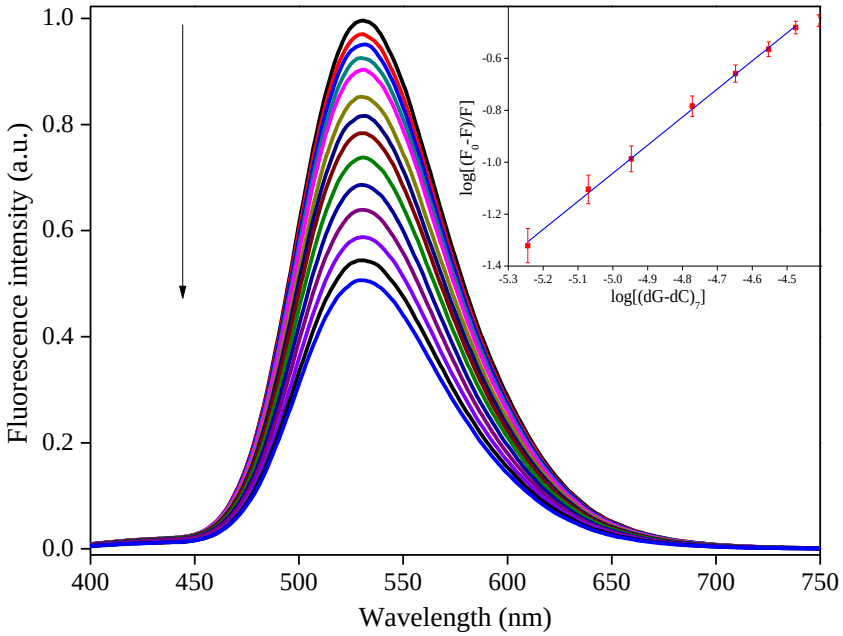

Figure S3. Fluorescence emission spectra of TPT (20 μM) in presence of $(dG\text{-}dC)_7$. Arrow represents DNA concentrations from 0 to 100 μM. Inset shows double logarithmic plot for the determination of binding constant.

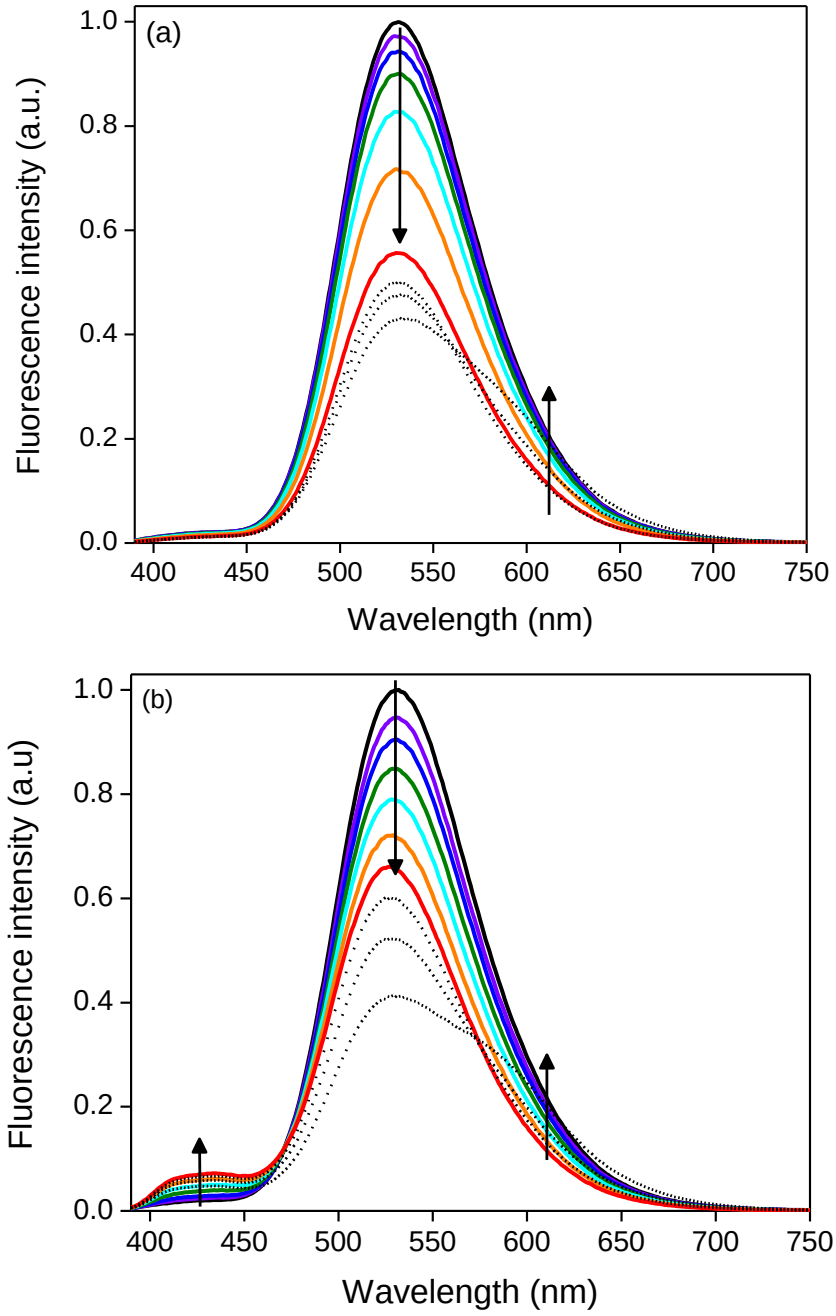

Figure S4. EtBr displacement assay experiment. TPT fluorescence quenching in presence of (a) $(dG\text{-}dC)_{15}$ and (b) $(dA\text{-}dT)_{15}$ is shown by downward arrow. Emission profile changes after EtBr titration are shown by black dotted lines and upward arrow.

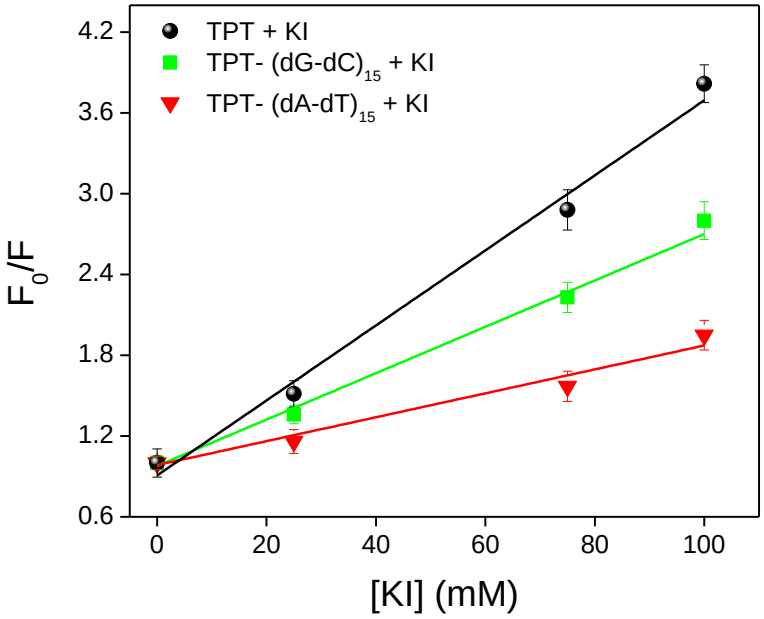

Figure S5. KI induced fluorescence quenching of TPT in absence and presence of DNA.

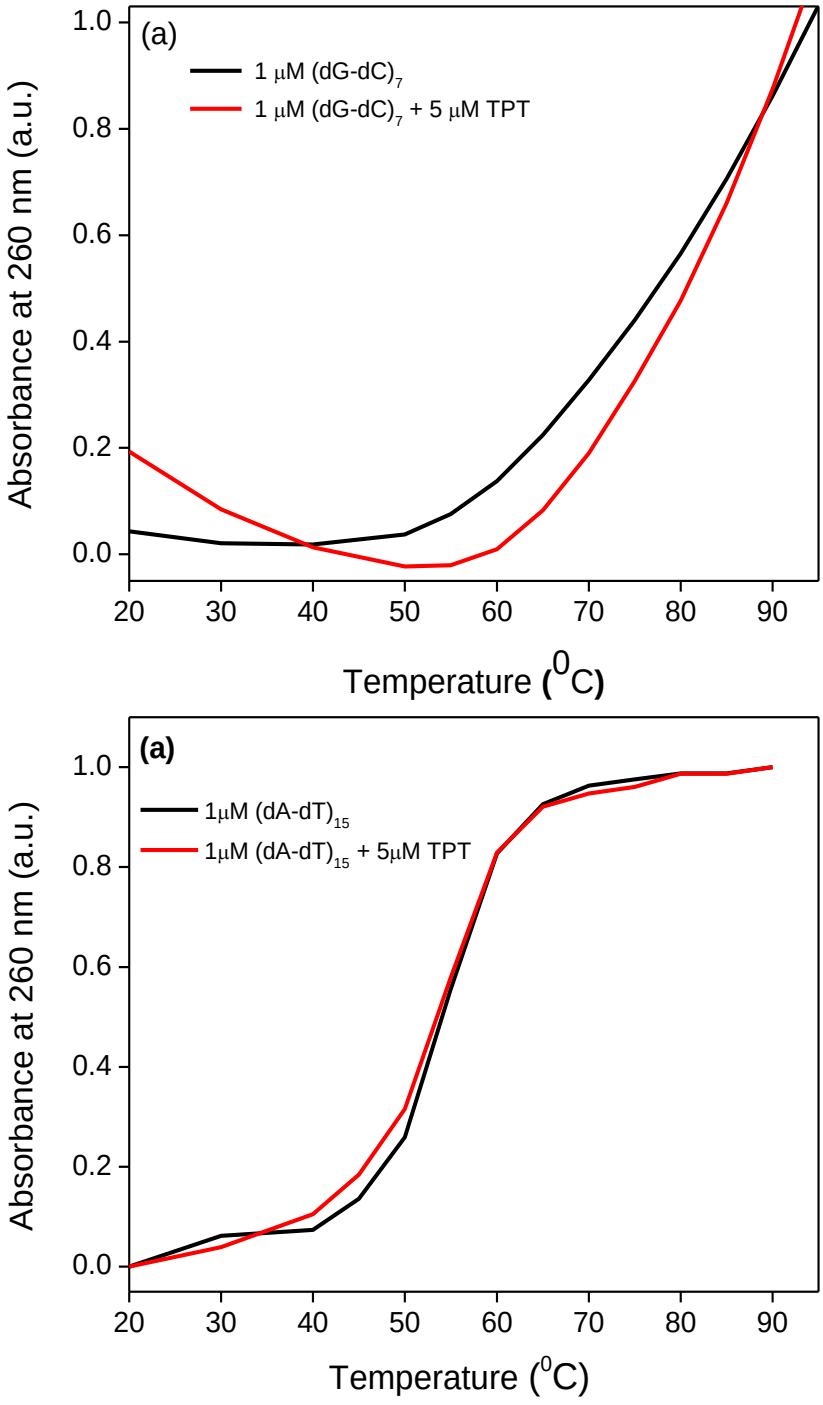

Figure S6. Thermal melting profiles are shown for (a) $(dG\text{-}dC)_7$ and (b) $(dA\text{-}dT)_{15}$ in presence and absence of TPT.

Note S1: As the melting temperature of $(dG\text{-}dC)_{15}$, which we have used in our study, is quite high (~85^0C), we used shorter ($(dG\text{-}dC)_7$) sequence for melting study.

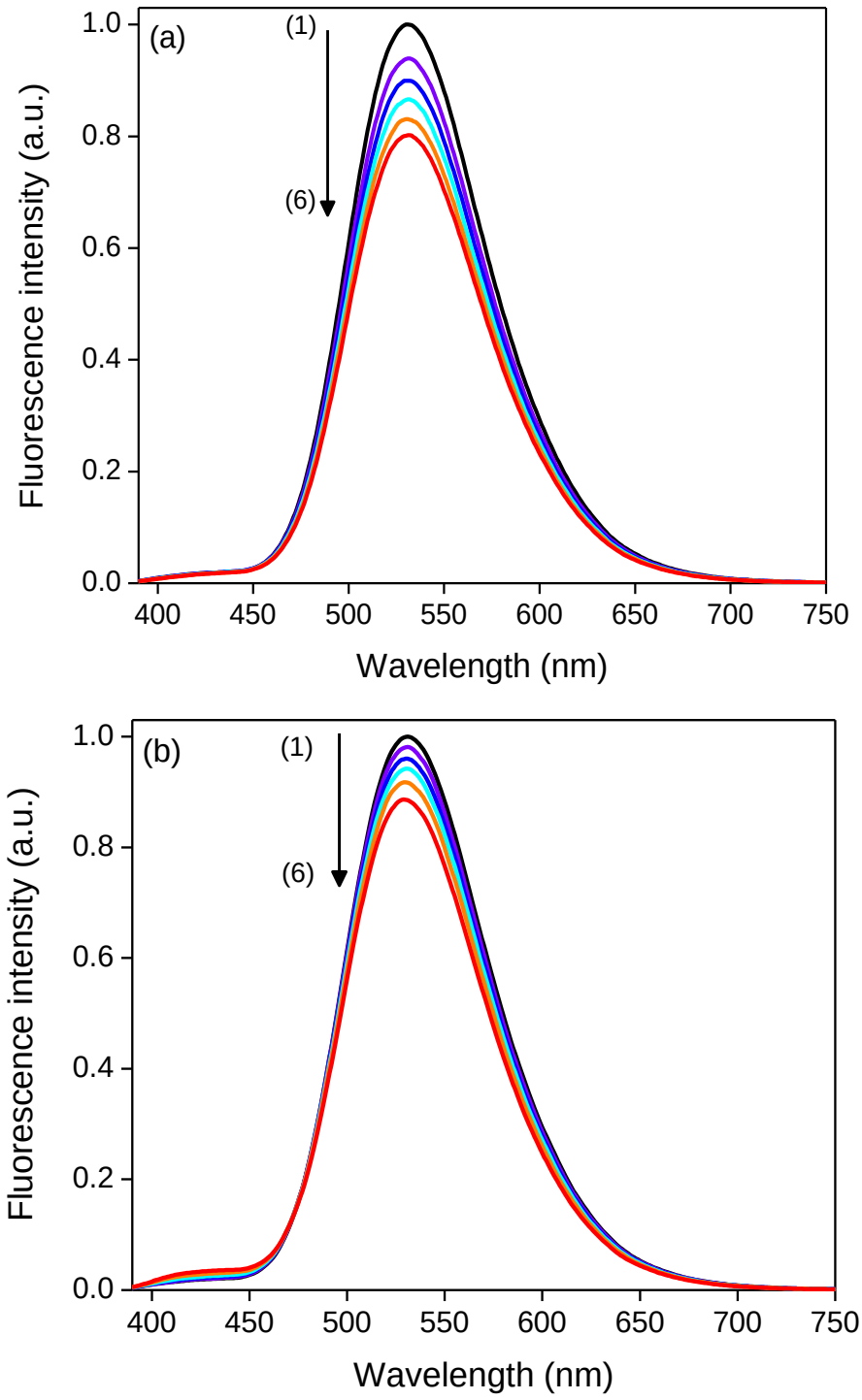

Figure S7. Relative intensity changes of TPT at higher NaCl concentration (100 mM) with successive additions of (a) $(dG\text{-}dC)_{15}$ and (b) $(dA\text{-}dT)_{15}$ DNA. 1→6 represents concentrations of DNA= 0, 20, 40, 60, 80 and 100 μM.

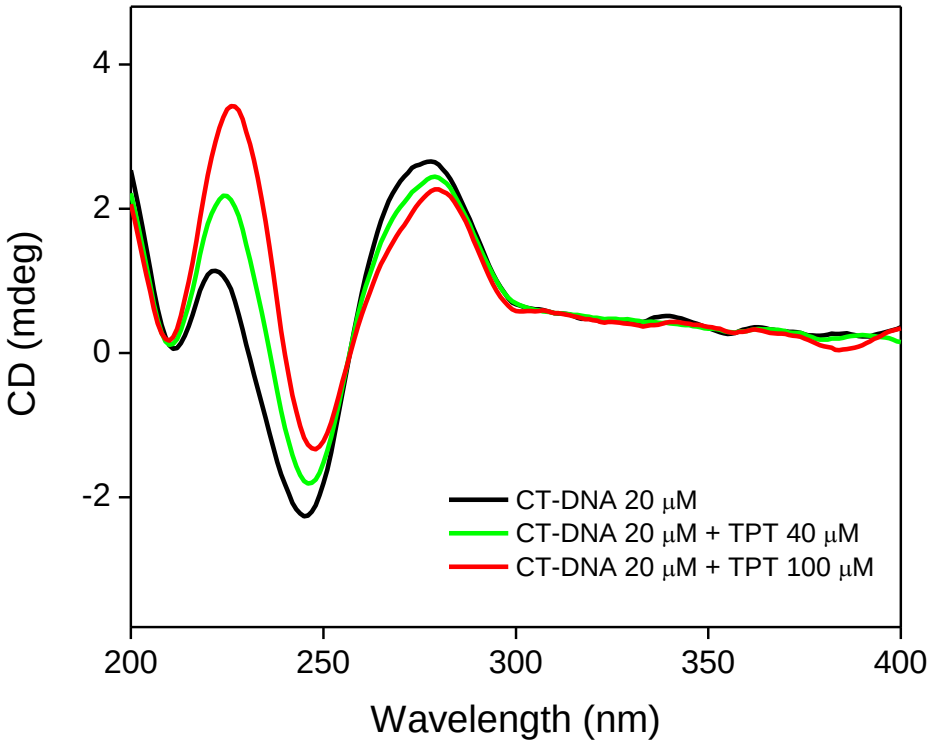

Figure S8. Circular dichroism profiles of CT-DNA in absence and presence of TPT.

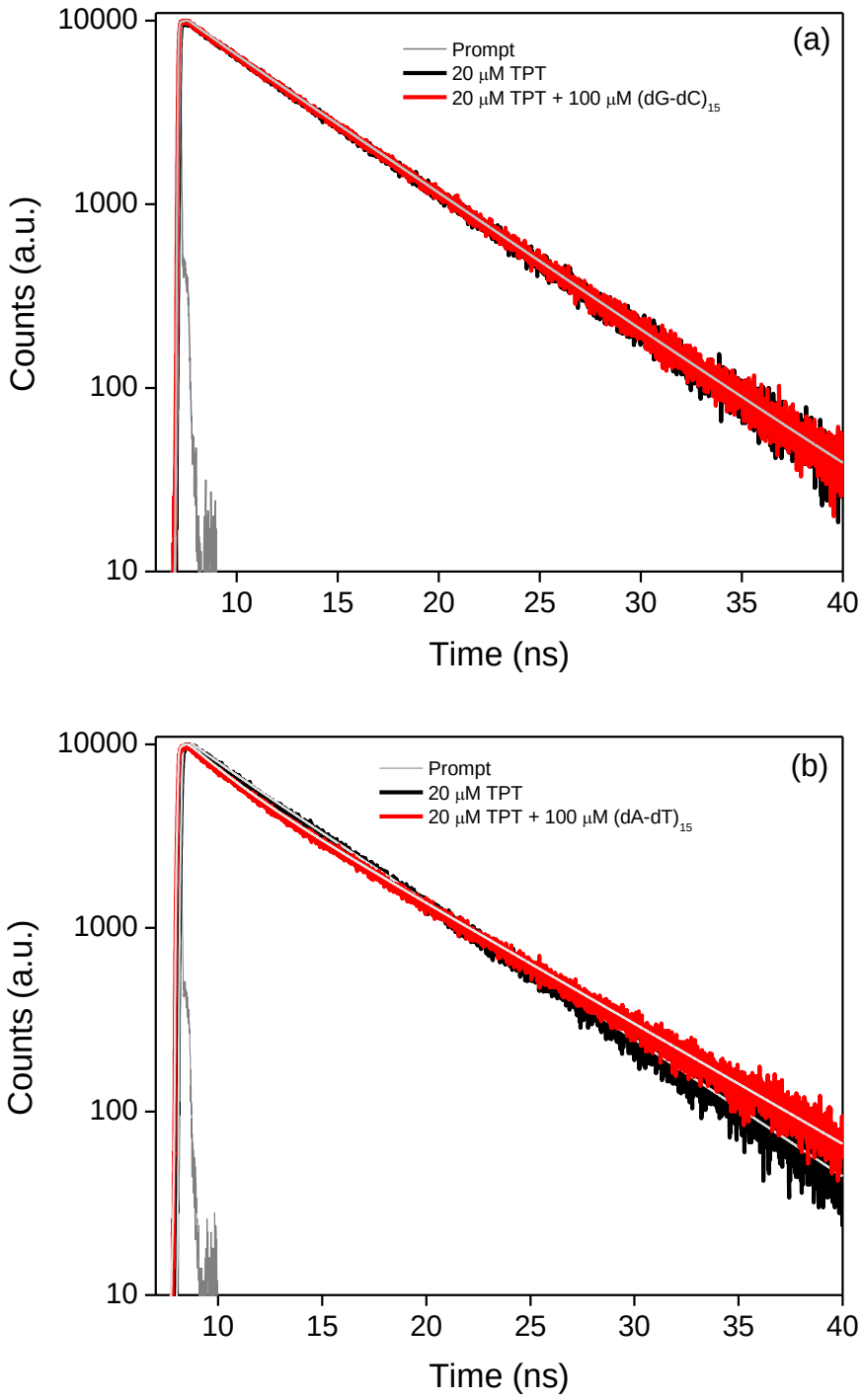

Figure S9. Lifetime decay profiles of free TPT and TPT bound to 100 μM (a) $(dG\text{-}dC)_{15}$ and (b) $(dA\text{-}dT)_{15}$ DNA collected at 530 nm (λ_{ex} = 375 nm).

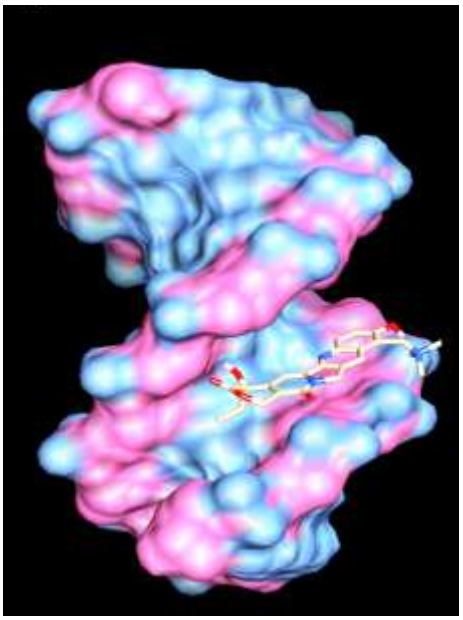

Figure S10. Molecular docking structures of C-TPT bound with dsDNA of d(CCGCTAGCGG).