

Supporting Information

**Guanine damage by singlet oxygen from SYBR Green I
in liquid crystalline DNA**

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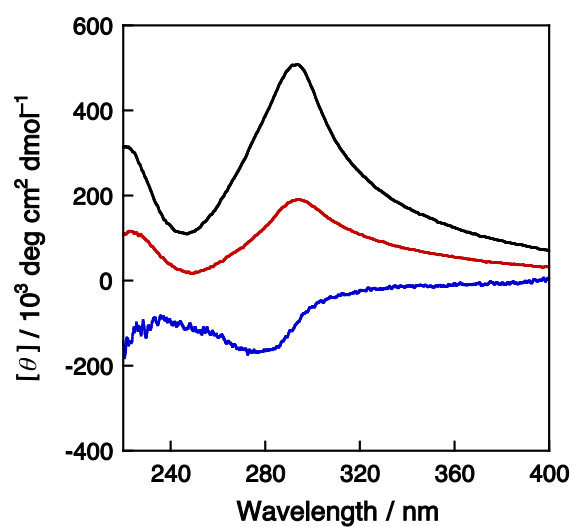


Fig. S1 CD spectra of G2 (blue line), G13 (red line), and G22 (black line) in 40 wt % PEG solution. No peak was observed above 400 nm. Experimental conditions: [DNA] = 4.0 μM and [NaCl] = 100 mM in pH 7.5 Tris-HCl buffer (50 mM).

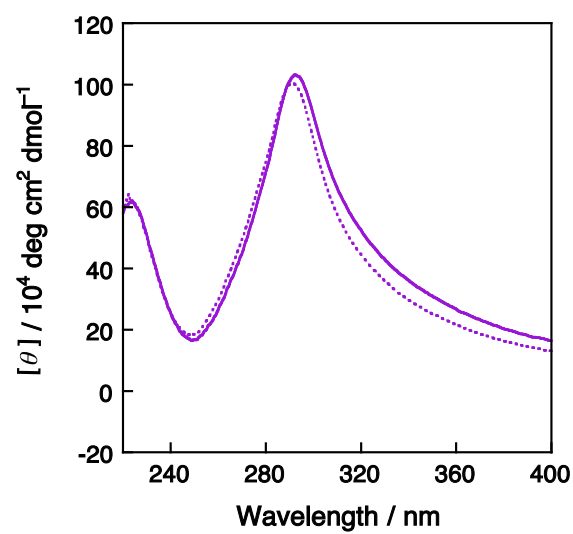


Fig. S2 CD spectra of G13 in the absence (purple solid line) and presence of 0.18% DMSO (purple dotted line) in 40 wt % PEG solution. Experimental conditions: [DNA] = 4.0 μ M and [NaCl] = 100 mM in pH 7.5 Tris-HCl buffer (50 mM).

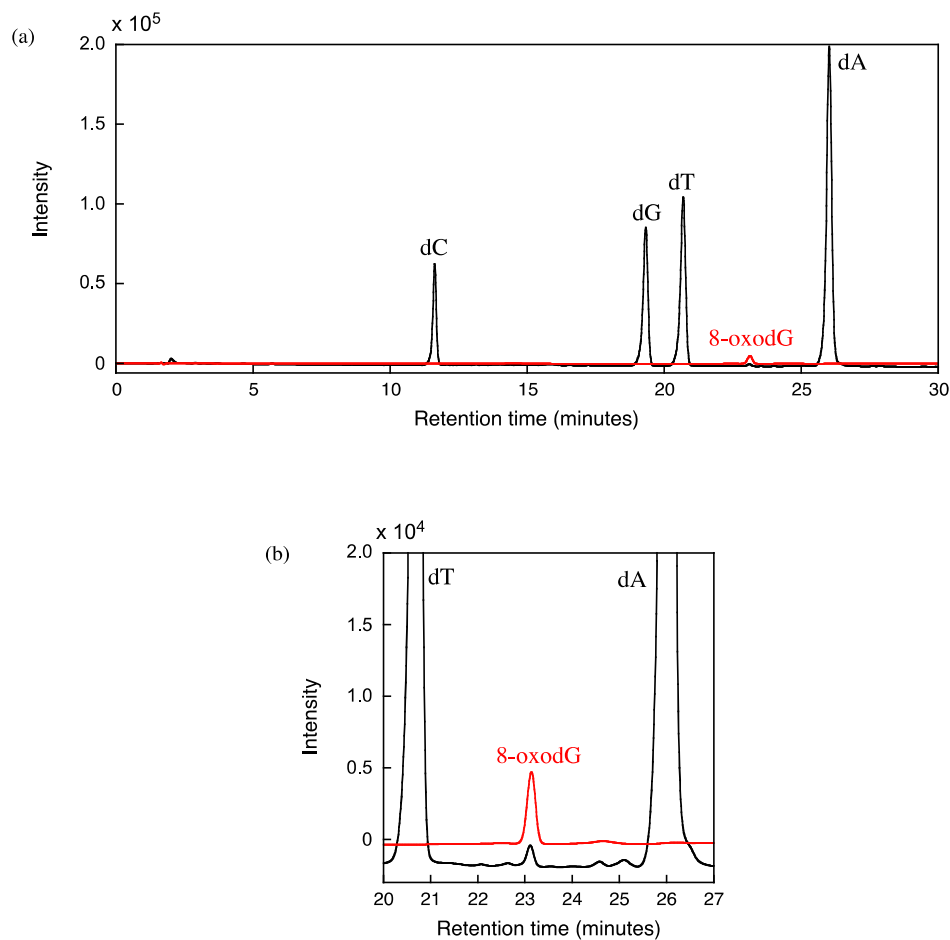


Fig. S3 (a) Overlaid HPLC chromatograms ($\lambda_{\text{detection}} = 254 \text{ nm}$) of the digested G13-DNA obtained after 30-min irradiation (black line) and 8-oxo-7,8-dihydro-2'-deoxyguanosine (8-oxodG, 120 pmol) (red line). (b) Expansion of HPLC profiles in the region of 20-27 min. Irradiation conditions: $[\text{DNA}] = 4.0 \mu\text{M}$, $[\text{SG}] = 10 \mu\text{M}$, and $[\text{NaCl}] = 100 \text{ mM}$ in 50 mM Tris-HCl (pH 7.5) containing 40 wt % PEG 1540 solution. HPLC Gradient: 0-7 % over 27 min.

5'-TTT CAA TTT ATT CAC TAA **PyU**AA AAA **GA** ACA TCT TTC TTA ATA -3'
3'-AAA ITT AAA TAA ITI ATT ATT TTT CCT TIT AIA AAI AAT TAT -5'

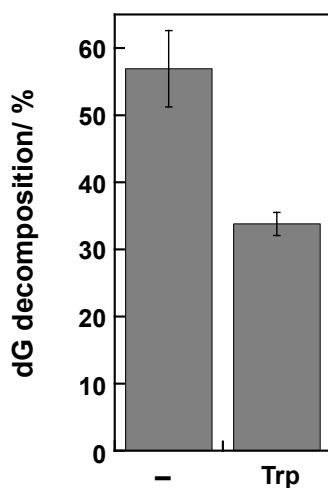


Fig. S4 dG decomposition percentages of the pyrene-modified oligonucleotides (4.0 μM) in the absence and presence of tryptophan (Trp, 1.0 mM). The sequence is shown above. 5-(pyrenylethynyl)-2'-deoxyuridine (PyU) was used as a photooxidant in oligonucleotides ($\lambda_{\text{ex}} > 350 \text{ nm}$, 10 min). The dsDNA was condensed as liquid crystalline phase in 40 wt% PEG 1540 solution containing 100 mM NaCl.