Supporting information for: Disassembly of Dimeric Cyanine Dye Supramolecular Assembly by Tetramolecular G-quadruplex Dependence on Linker Length and Layers of G-quartet

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1. The sequences of 5 oligonucleotides in the study

| Name | Sequence\(^a\) (from 5' to 3') | Motifs                        |
|------|--------------------------------|-------------------------------|
| TG3T | TGGGT                          | Parallel DNA G-quadruplex     |
| TG4T | TGGGGT                         | Parallel DNA G-quadruplex     |
| TG5T | TGGGGGT                        | Parallel DNA G-quadruplex     |
| TG6T | TGGGGGGT                       | Parallel DNA G-quadruplex     |
| TG8T | TGGGGGGGGT                     | Parallel DNA G-quadruplex     |

\(^a\)These oligonucleotides were dissolved in PBS (K\(^{+}\)) (10 mM KH\(_2\)PO\(_4\)/K\(_2\)HPO\(_4\), 70 mM KCl, 1 mM EDTA, pH 7.4)

2. The Structure identification of 5 sequences by CD spectroscopy.
Figure S1. The CD spectra for TG3T,TG4T,TG5T,TG6T and TG8T in 10 mM PBS (K⁺).

2. ¹H-NMR titration of TC-P4 with TG4T in methyl protons.

Figure S2. The unambiguously assigned ¹H-NMR titration spectra of 120 μM TG4T with different concentrations of TC-P4 in 0.6 mL PBS (10 mM KH₂PO₄, 70 mM KCl, 1 mM EDTA, pH 7.4 H₂O/D₂O, 9/1,v/v) in methyl protons.
**Figure S3.** The ratio value of absorbance at 594 nm via absorbance at 492 nm at a function of [TGrnT]/[TC-P5]=4 (n=3-6,8). The concentration of TC-P5 is 5 μmol/L.