



Supplementary Materials: Effects of Length and Loop Composition on Structural Diversity and Similarity of (G₃TG₃N_mG₃TG₃) G-Quadruplexes

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Figure S1. Kinetic study of G4 formation. The kinetic traces of T10T, T4T-1, and T2T for multimeric G4 formations and T10T-FN, T4T-1-FN, and T2T-FN for monomeric G4 formations by monitoring the 265 nm CD signal after the addition of 20 mM K⁺.



Figure S2. The effect of loop base on G4 formation of $(G_3HG_3N_mG_3HG_3)$ sequences. CD and NMR spectra of A16T, A10A, and C10C in 10 mM Tris and after 1h and overnight addition of 100 mM K⁺ together with their PAGE assays.



Figure S3. The effect of loop base on G4 formation of $(G_3HG_3N_mG_3HG_3)$ sequences with flanking nucleotides. NMR spectra of A16T-FN, A10A-FN and C10C-FN in 10 mM Tris and after 1h and overnight addition of 100 mM K⁺ together with their PAGE assays. The same DNA concentration of 100 μ M was used in the experiments of NMR and PAGE of this work.



Figure S4. The effect of loop base on G4 formation of $(G_3TG_3N_4G_3TG_3)$ sequences with flanking nucleotides. NMR spectra of A4A-FN and C4C-FN in 10 mM Tris and after 1h and overnight addition of 100 mM K⁺ together with their PAGE assays. The same DNA concentration of 100 μ M was used in the experiments of NMR and PAGE of this work.



Figure S5. The effect of loop base on G4 formation of $(G_3T_2G_3N_4G_3TG_3)$ and $(G_3T_2G_3N_4G_2G_3)$ sequences. CD and NMR spectra of T₂4T and T₂4T₂ in 10 mM Tris and after 1h and overnight addition of 100 mM K⁺ together with their PAGE assays after overnight addition of 100 mM K⁺. The same DNA concentration of 100 μ M was used in the experiments of CD, NMR and PAGE of this work.



Figure S6. The effect of K⁺ concentration on mt10248 G4 structures. The imino proton NMR spectra of mt10248 in 5 mM K⁺ solution overnight and after 10 min, 1 h, and overnight addition of K⁺ to 100 mM K⁺ solution.



Figure S7. Ligand binding ofBRACO-19 to (G₃TG₃N_mG₃TG₃)-FN G4 structures. Imino proton NMR spectra of T2T-FN and T4T-FN in 100 mM K⁺ solution and after 10 min, 1 h, and overnight addition of 1 eq. BRACO-19.



Figure S8. The effect of loop base on G4 formation of (G₃HG₃N₁₀G₃HG₃)-FN sequences. NMR spectra of A10A-1-FN and T10T-1-FN in 10 mM Tris and after 1h and overnight addition of 20 mM K⁺ and 100 mM K⁺.