SUPPORTING INFORMATION

Studying potassium induced G-quadruplex DNA folding process using MicroScale Thermophoresis

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Note S1. Computation details for Equation 1.

For dynamic binding:

$$DNA + K^+ \rightleftharpoons DNA \cdot K^+$$

The equilibrium dissociation constants (K_D) can be defined as:

$$K_D = \frac{[DNA][K^+]}{[DNA \cdot K^+]}$$

Because of the principle of equilibrium constant (K_{eq}):

$$K_{eq} = \frac{\left[DNA \cdot K^+ / c^\Theta\right]}{[DNA/c^\Theta][K^+/c^\Theta]}$$

In which, c^Θ is normal concentration. So we get:

$$K_{eq} = c^\Theta / K_D$$

Because of van 't Hoff equation:

$$\ln K_{eq} = -\frac{\Delta H^\Theta}{RT} + \frac{\Delta S^\Theta}{R}$$

we obtain:

$$\ln\left(\frac{c^\Theta}{K_D}\right) = -\frac{\Delta H^\Theta}{RT} + \frac{\Delta S^\Theta}{R}$$

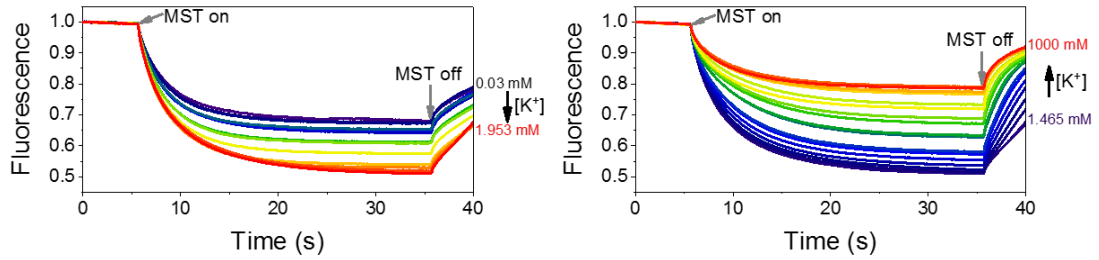

Figure S1. MST time traces for the interactions of K^+ with hTG4 at 22 °C.

The experiments were carried out using 60% LED power and 40% MST, Laser-On time 30 s and Laser-Off time 5 s.

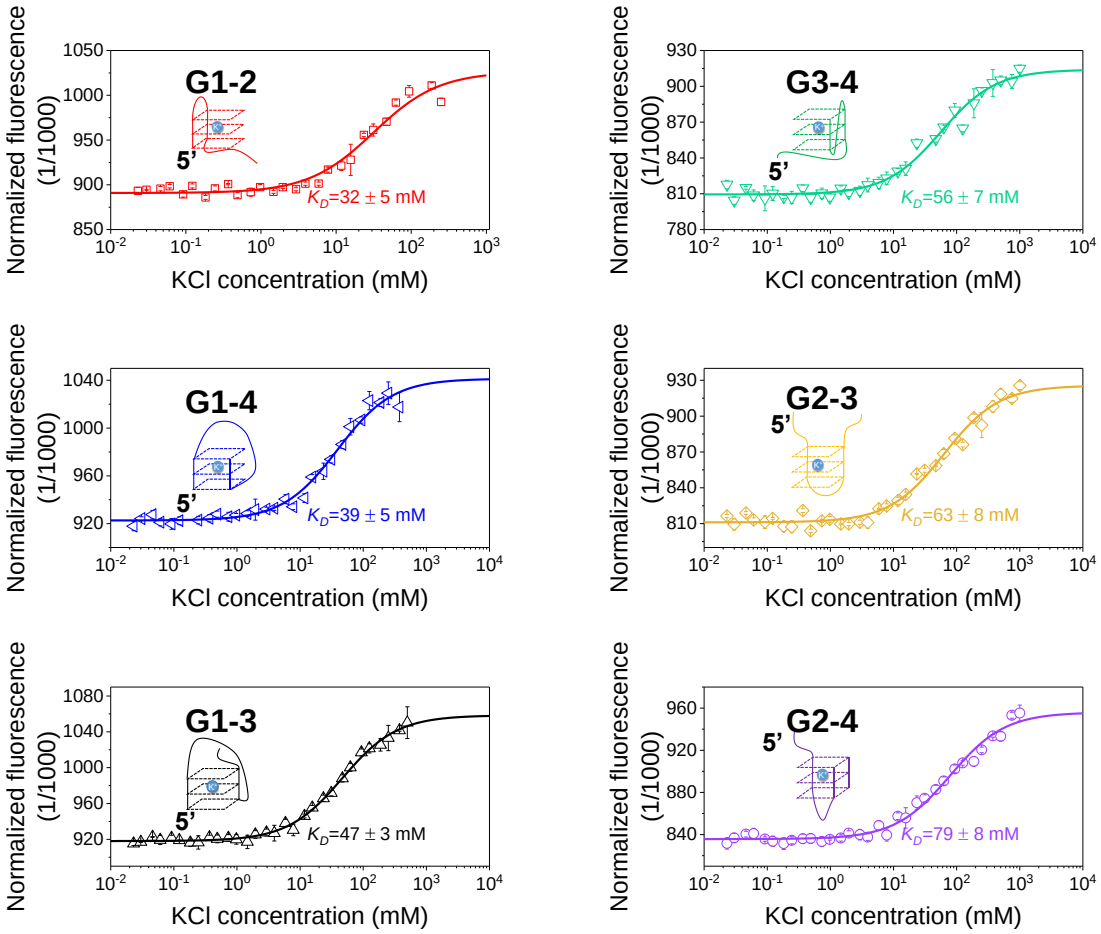

Figure S2. The thermophoretic signal changes and fitting of G-hairpins.

Using the law of mass action, the K_D values of all possible six G-hairpins were calculated and shown in Figures and Table 2. Error bars represent S.D. (n = 3).

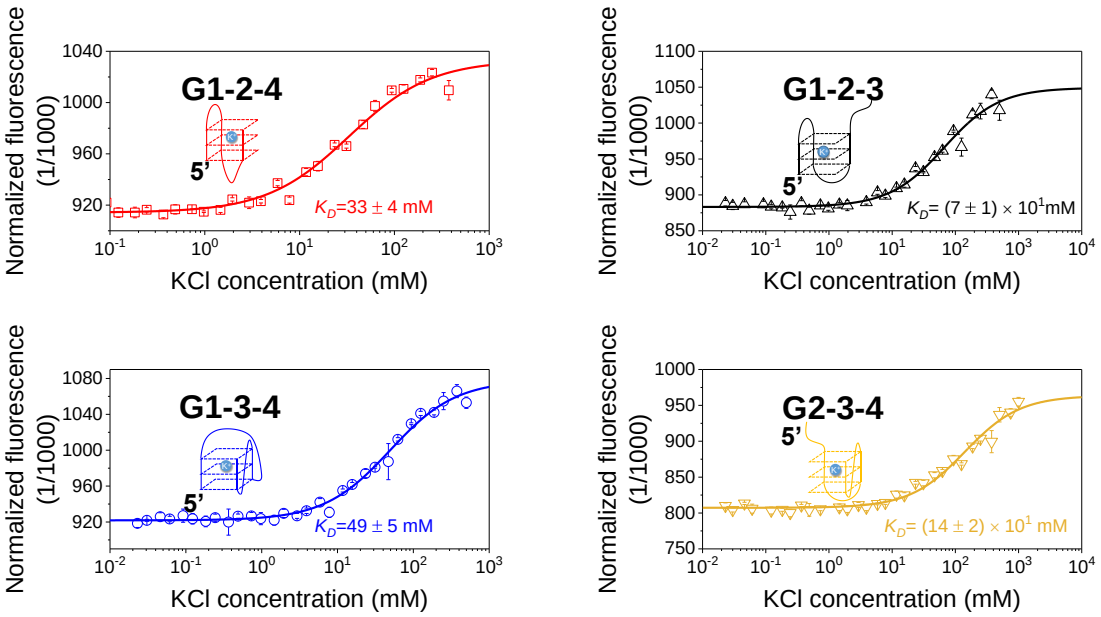

Figure S3. The thermophoretic signal changes and fitting of G-triplexes.

Using the law of mass action, the K_D values of all possible four G-triplexes were calculated and shown in Figures and Table 2. Error bars represent S.D. (n = 3).

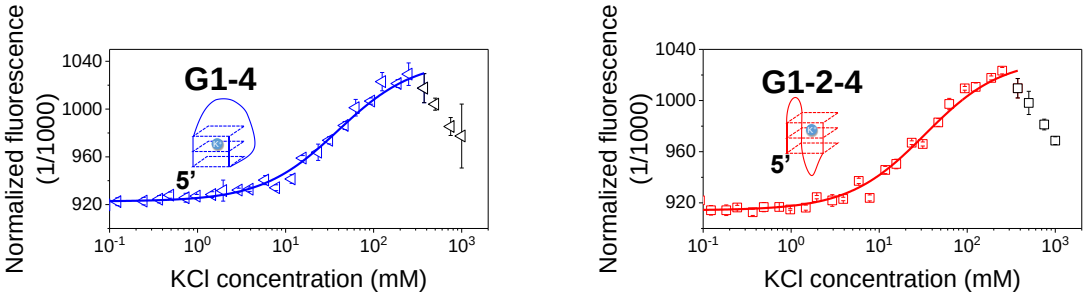

Figure S4. The biphasic binding pattern and the first progress fitting of G1-4 and G1-2-4.