

Supplementary Information

RHPS4 shifted the conformation ensemble equilibrium of Tel24 by preferentially stabilizing the (3+1) hybrid-2 conformation

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Table S1 Oligonucleotide sequences used in the experiment

Name	Origin	Sequence(5'→3')
Tel24	Human telomere	TTAGGGTTAGGGTTAGGGTAAGGG
<i>c-MYC Pu22</i>	Promoter	TGAGGGTGGGTAGGGTGGGTAA
<i>KRAS</i>	Promoter	AGGGCGGTGTGGGAAGAGGGGAAGAGGGGGAGG
<i>c-KIT1</i>	Promoter	AGGGAGGGCGCTGGGAGGAGGG

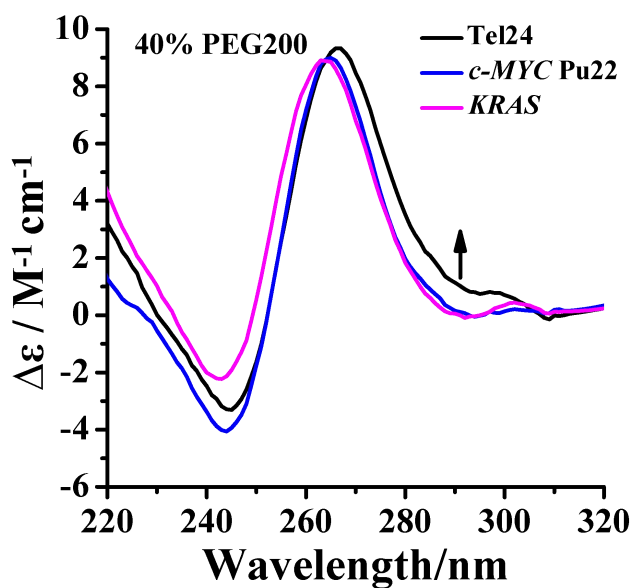


Fig. S1 The CD spectra of different of G-quadruplexes in a solution containing 40 wt% PEG200. The concentration of oligonucleotide was 10 μM .

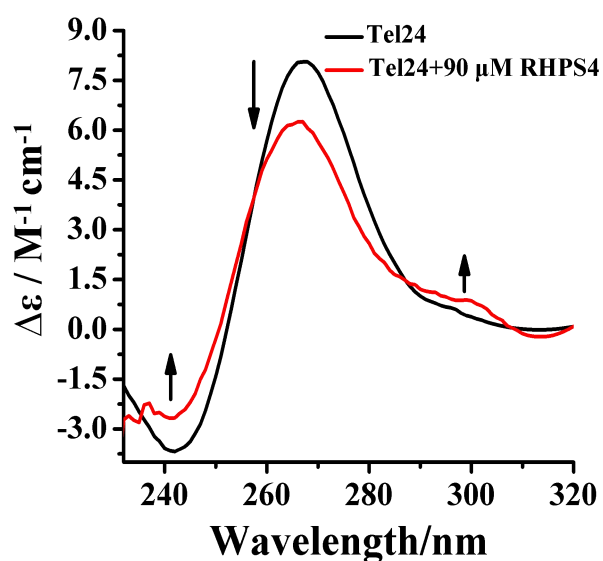


Fig. S2 Effects of the RHPS4 on the CD spectra of Tel24 in a solution containing 40 wt% PEG200. The concentration of Tel24 was 10 μM . The concentration of RHPS4 was 90 μM .

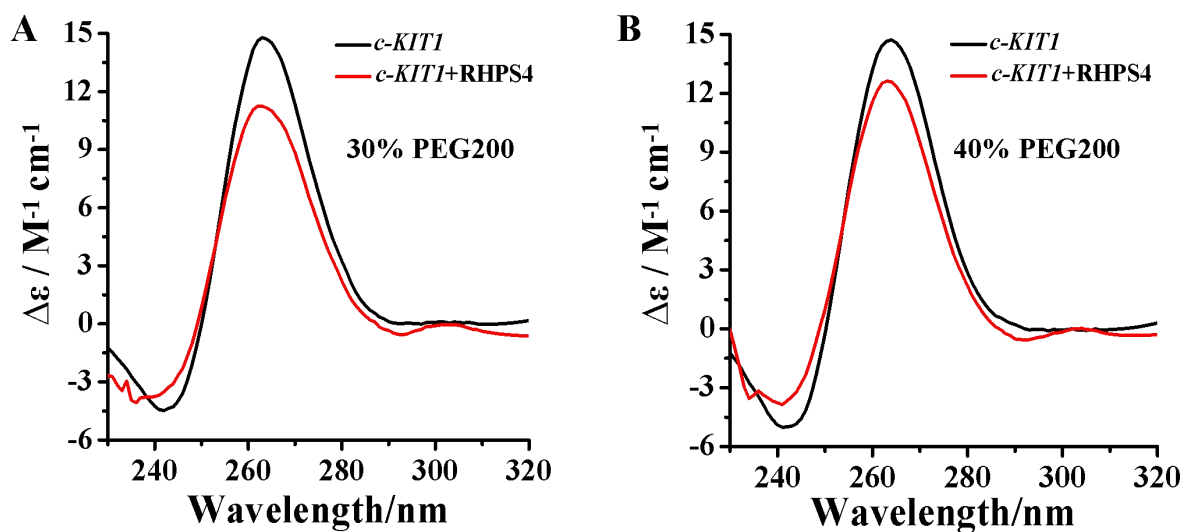


Fig. S3 Effects of the RHPS4 on the CD spectra of *c-KIT1* in a solution containing 30 wt% (A) and 40 wt% (B) PEG200. The concentration of *c-KIT1* was 10 μM . The concentration of RHPS4 was 90 μM .

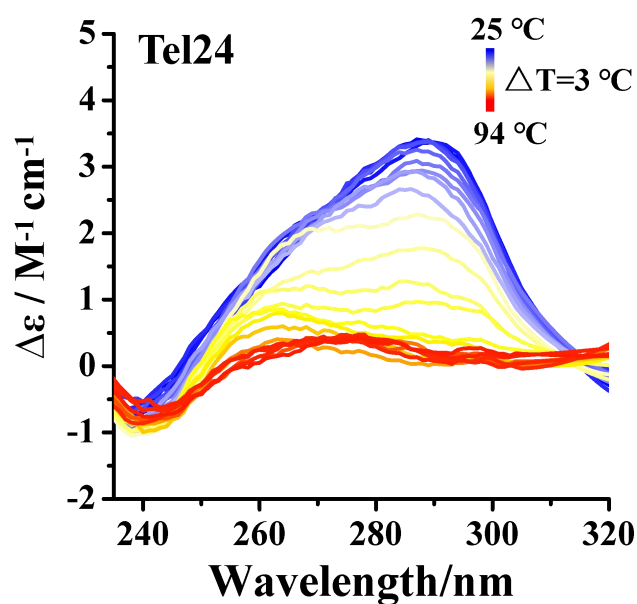


Fig. S4 Topology changes of Tel24 in 10 mM Tris-HCl (pH 7.5) buffer containing 100 mM KCl during melting. The concentration of Tel24 was 10 μM . The concentration of RHPS4 was 90 μM .

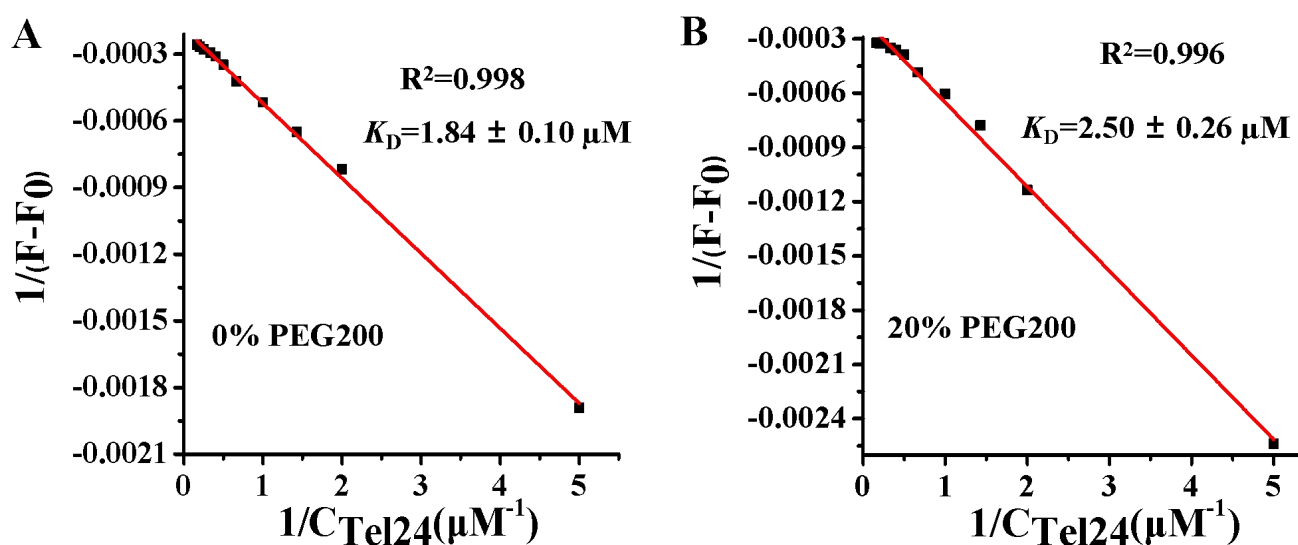


Fig. S5 Benesi-Hildebrand plot of $1/(F-F_0)$ versus $1/[\text{DNA}]$. The dissociation constant (K_D) value of RHPS4 and Tel24 in solutions in the absence (A) and presence (B) of PEG200 was calculated as $1.84 \pm 0.10 \mu\text{M}$ and $2.50 \pm 0.26 \mu\text{M}$, respectively.

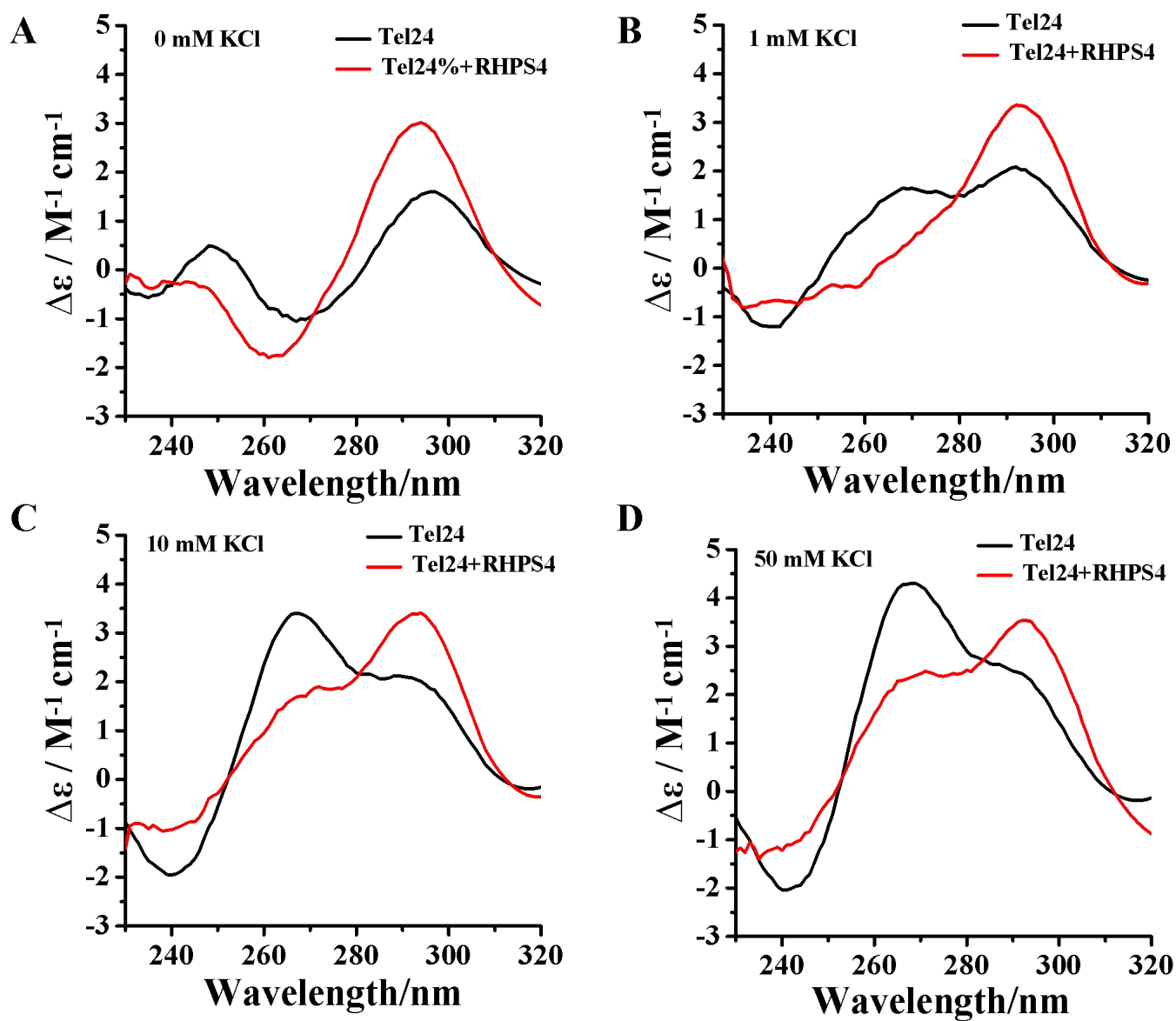


Fig. S6 Effects of the RHPS4 on the CD spectra of Tel24 in a solution containing 20 wt% PEG200 and different concentrations of KCl. (A) 0 mM KCl, (B) 1 mM KCl, (C) 10 mM KCl, (D) 50 mM KCl.