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Supporting Material

Single-Molecule TPM Studies on the Conversion of Human Telomeric DNA

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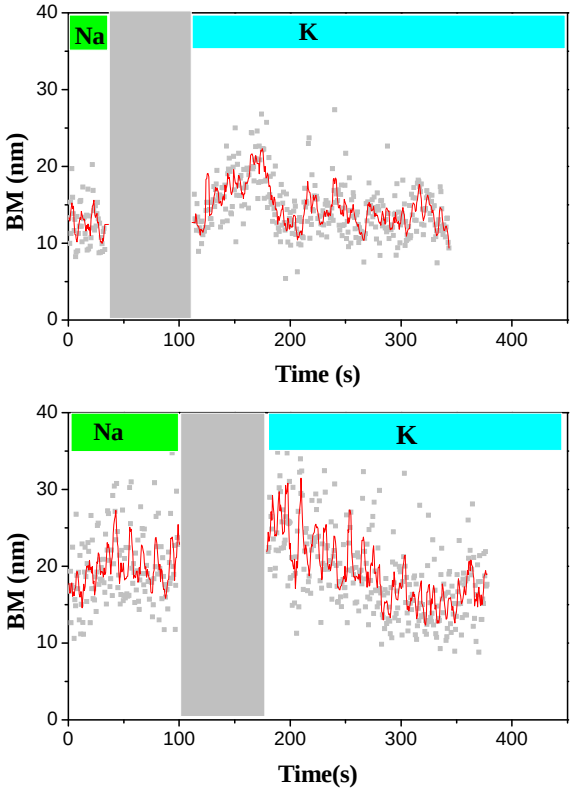
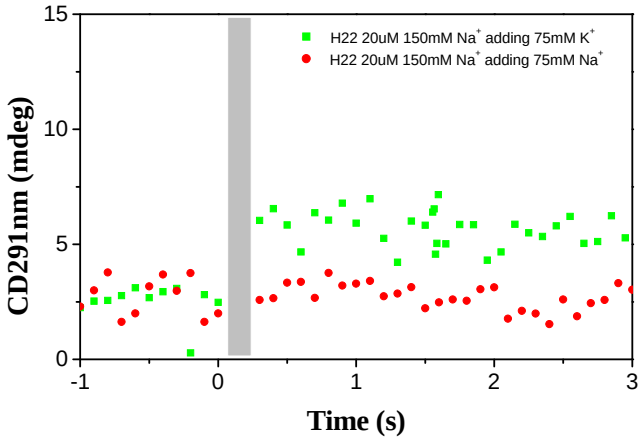
Supplemental Figures

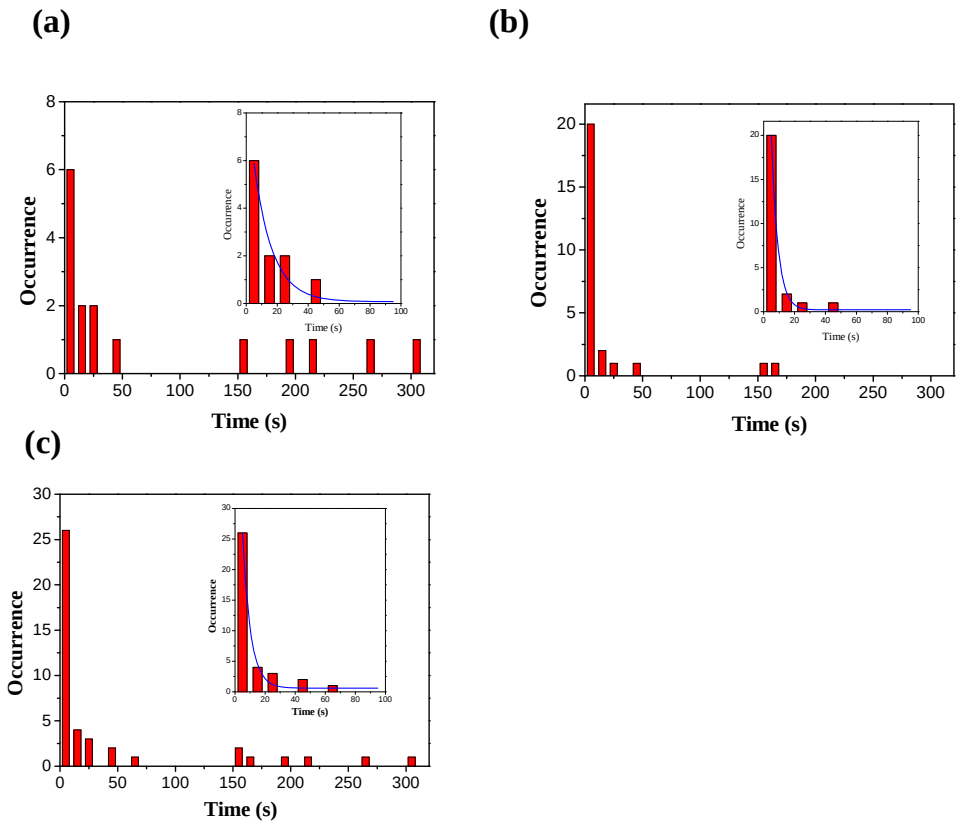


Supplemental Figure S1
Within our experimental resolution, we observed 2 out of 63 molecules with larger amplitude of fluctuations in BM during Na/K exchange.



Supplemental Figure S2

The time-courses of the stopped-flow CD spectra at 291 nm. The 291 nm CD band is the signature band of folded G4 structure. In this set of experiments, 22 nt H22 DNA is prepared in the 150 mM Na^+-induced folded state. It was later on mixed with high concentration of K^+ to reach a final K^+ concentration of 75 mM (green dots). This stopped-flow CD spectrophotometer acquires data every 100 ms, and has mixing and system re-stabilization deadtime of ~ 200 ms (gray bar). The fact that there is no decrease in 291 nm band during the Na/K exchange, indicating that unfolding intermediate can not be the major pathway in this exchange process. The full CD spectra taken after 1 minute of the Na/K has the same features as those H22 prepared in 100 mM K^+, suggesting that the Na/K exchange did occur, and convert to K^+-induced state. Control experiments done by mixing high concentration of Na^+ in the H22 prepared originally in Na^+ showed no change in 291 nm signal (red dots).



Supplemental Figure S3

The dwell time histogram of h22L DNA unfolded by addition of excess anti-sense c12 DNA. (a). 4,000 fold excess of c12 condition (N=16) shows a single exponential decay time constant 12.0±2.7s (R^2=0.924) (b). 10,000 fold excess of c12 condition (N=27) with a single exponential decay time constant 4.2±0.4s (R^2=0.995) (c) The combined histogram from 4,000 fold and 10,000 fold excess of c12 were fitted to a similar single exponential decay time constant 5.3±0.7s (R^2=0.983). At our experimental resolution, the c12-stabilized unfolding rate at this time scale (~ 10 s) is not dependent on c12 concentrations.