SUPPLEMENTARY INFORMATIONS

Table S1. Oligonucleotides used in the study.

Label	Sequence
Q	GGGTGGGTGGGTGGG
T30695	GGGTGGGTGGGTGGGT
T30695TT	TTGGGTGGGTGGGTGGGT
Q-TGA	GGGTGGGTGGGTGGGTGA
Q-TAA	GGGTGGGTGGGTGGGTAA
AGT-Q	AGTGGGTGGGTGGGTGGG
AAT-Q	AATGGGTGGGTGGGTGGG
AGT-Q-TGA	AGTGGGTGGGTGGGTGGGTGA
AAT-Q-TAA = WT	AATGGGTGGGTGGGTGGGTAA
T1	AATTGGTGGGTGGGTGGGTAA
T2	AATGTGTGGGTGGGTGGGTAA
T3	AATGGTTGGGTGGGTGGGTAA
T4	AATGGGTTGGTGGGTGGGTAA
T5	AATGGGTGTGTGGGTGGGTAA
T6	AATGGGTGGTTGGGTGGGTAA
T7	AATGGGTGGGTTGGTGGGTAA
T8	AATGGGTGGGTGTGTGGGTAA
T9	AATGGGTGGGTGGTTGGGTAA
T10	AATGGGTGGGTGGGTTGGTAA
T11	AATGGGTGGGTGGGTGTGTAA
T12	AATGGGTGGGTGGGTGGTTAA
aWT	AATGGGTTTGGGTTTGGGTTTGGGTAA
aT1	AATTGGTTTGGGTTTGGGTTTGGGTAA
aT2	AATGTGTTTGGGTTTGGGTTTGGGTAA
aT3	AATGGTTTTGGGTTTGGGTTTGGGTAA
aT4	AATGGGTTTTGGTTTGGGTTTGGGTAA
aT5	AATGGGTTTGTGTTTGGGTTTGGGTAA
aT6	AATGGGTTTGGTTTTGGGTTTGGGTAA
aT7	AATGGGTTTGGGTTTTGGTTTGGGTAA
aT8	AATGGGTTTGGGTTTGTGTTTGGGTAA
aT9	AATGGGTTTGGGTTTGGTTTTGGGTAA
aT10	AATGGGTTTGGGTTTGGGTTTTGGTAA
aT11	AATGGGTTTGGGTTTGGGTTTGTGTAA
aT12	AATGGGTTTGGGTTTGGGTTTGGTTAA

Figure S1. Averaged CD spectra from three experiments of model parallel quadruplexes with various terminal overhangs measured in 1K buffer at 20 °C; solid curves represent CD spectra, dashed curves represent difference to the spectrum of Q.

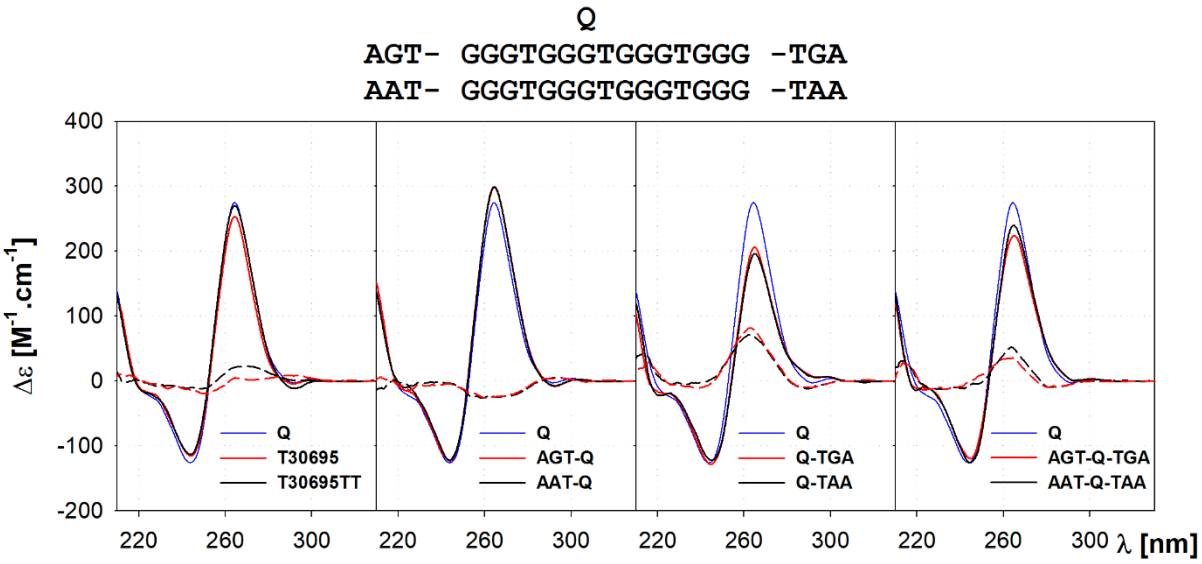


Figure S2. Averaged CD spectra from three experiments of model parallel quadruplexes with various terminal overhangs measured in 1K buffer (blue) and in 100K buffer (red). The difference between the two spectra is in black.

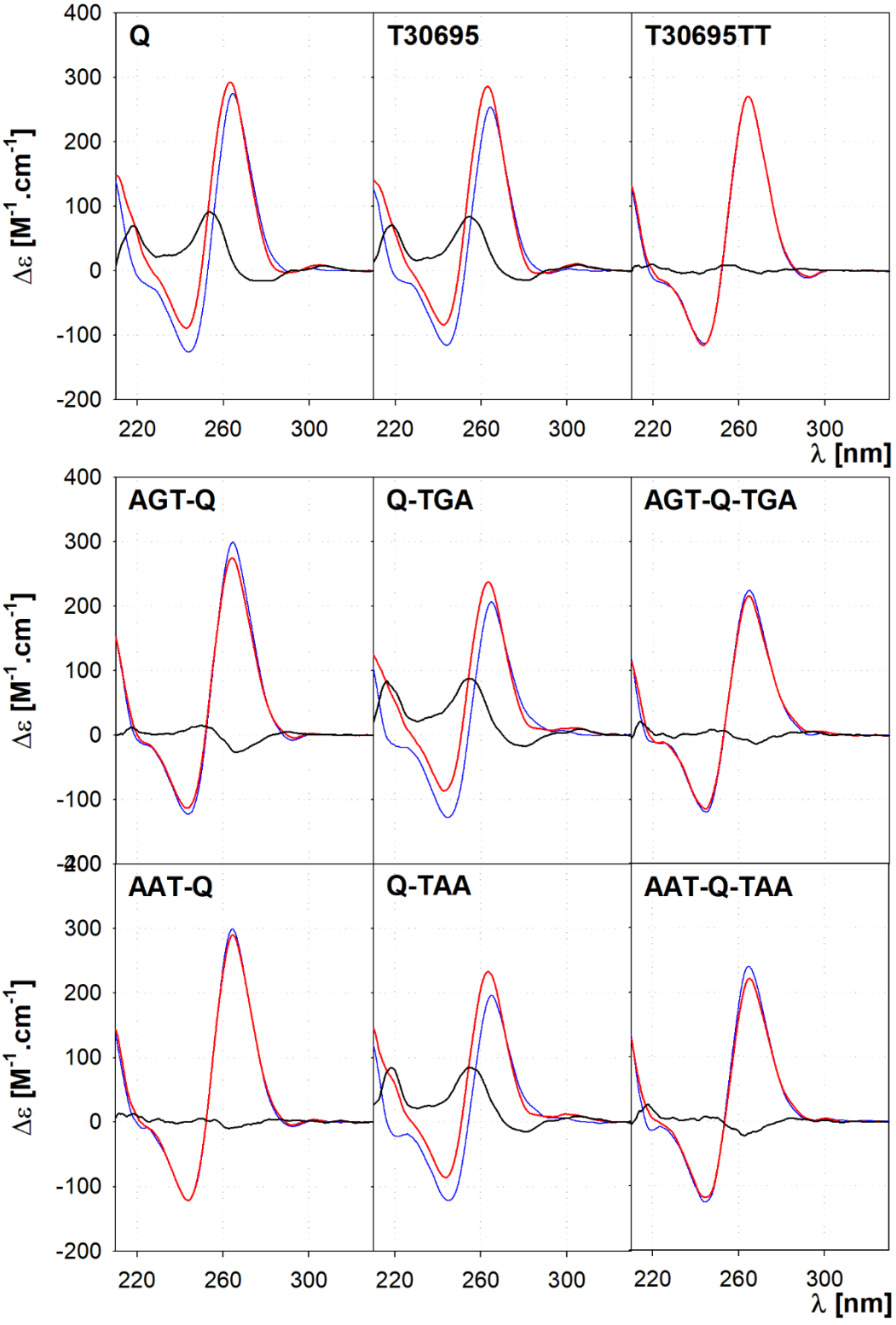


Figure S3. Native PAGE performed in 1K buffer (1 mM potassium phosphate buffer, pH 7) at 20 °C. Oligonucleotides were prepared in the same buffer.

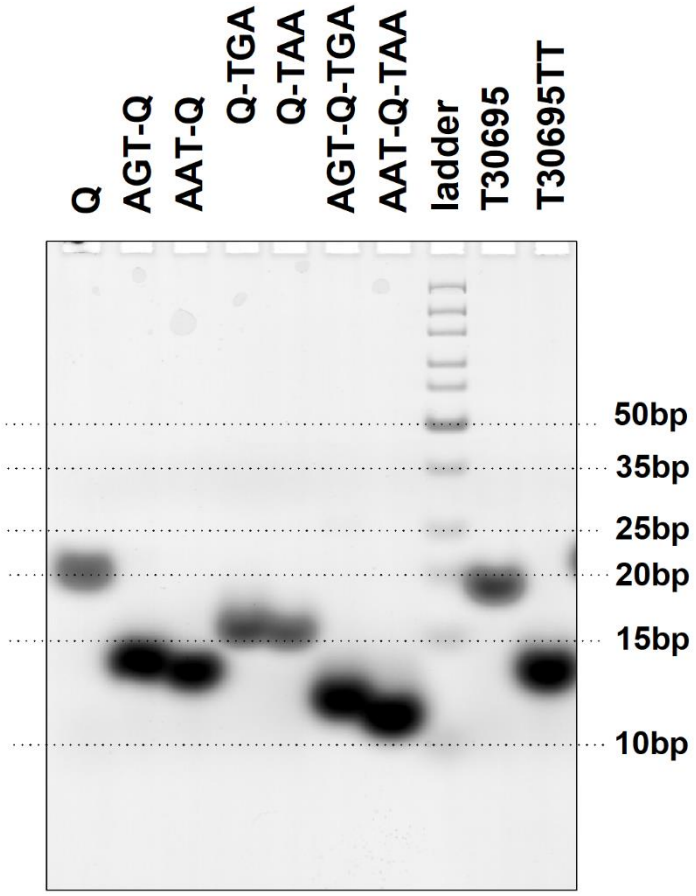


Figure S4. Averaged UV melting curves from three experiments of model parallel quadruplexes with various terminal overhangs measured in 1K buffer and expressed as folded fraction (0-1 normalized curves) of G4 during renaturation (black) and denaturation (red).

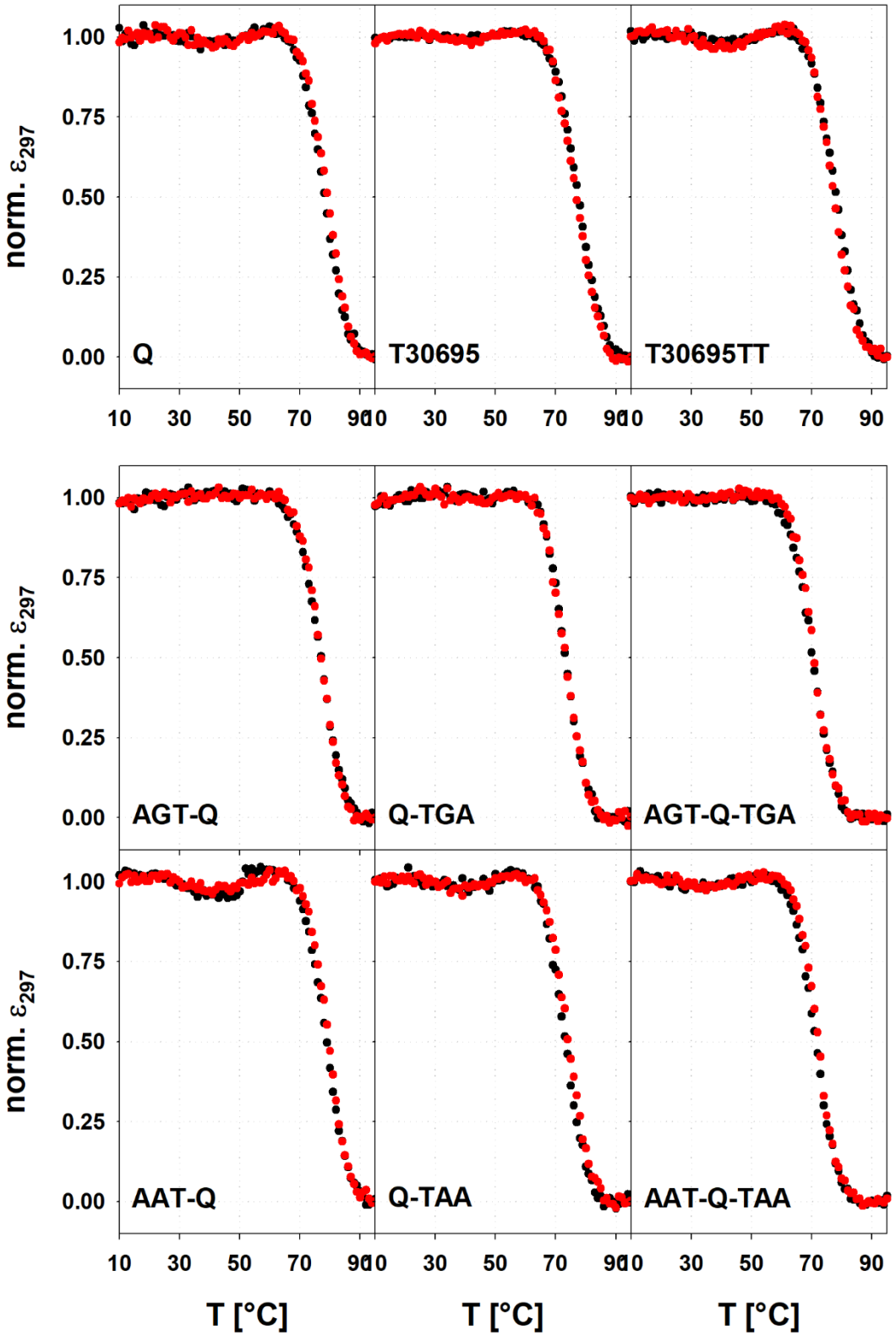


Figure S5. Left: CD spectra of Q (**A**,**B**) and AAT-Q-TAA (**D**,**E**) in 1K (**A**,**D**) and 100K (**B**,**E**) buffer at selected temperatures between 20 and 85 °C. Right: Δε at 264 nm (black) and 220 nm (red) of Q (**C**) and AAT-Q-TAA (**F**) as a function of temperature, measured in 1K (solid circles) and in 100K buffer (empty circles).

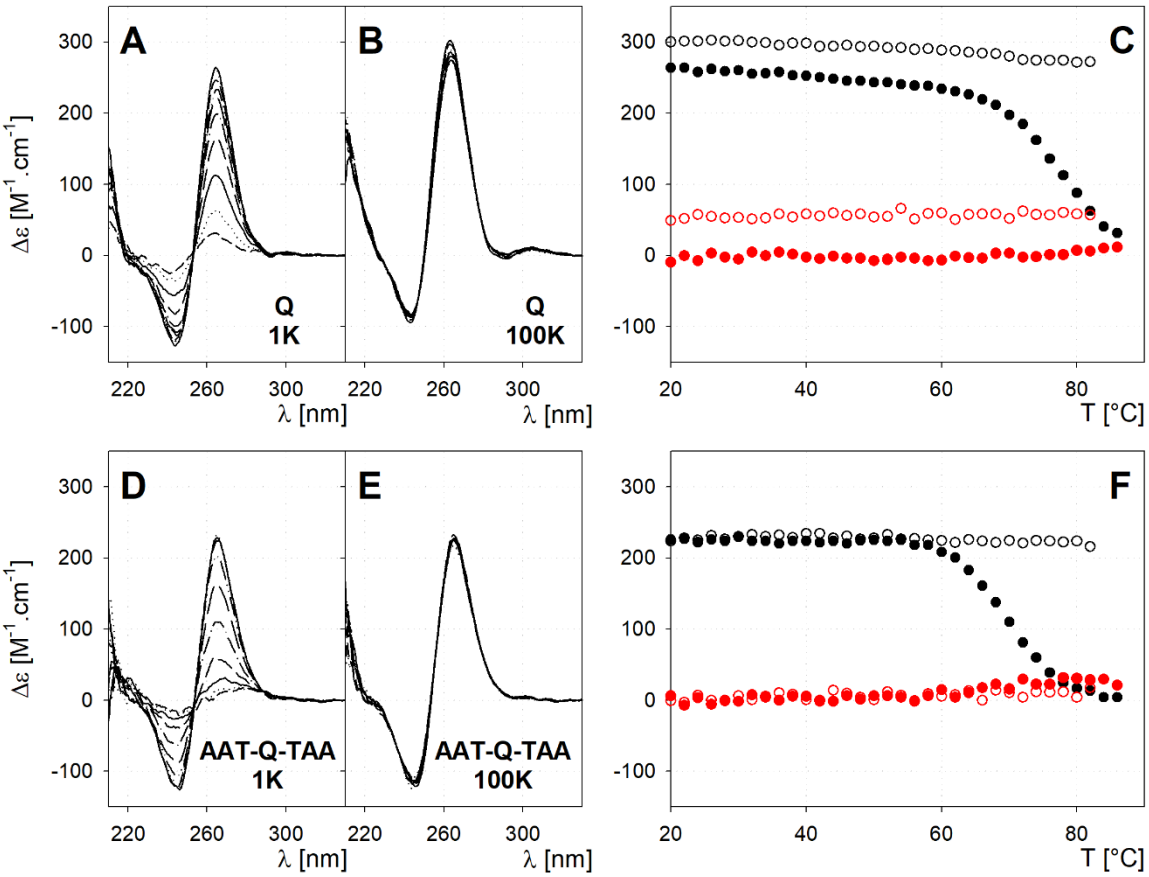


Figure S6. Averaged CD spectra from three experiments of WT (red) and G/T mutated variants (black) of model parallel quadruplex measured in 100K buffer at 23 °C.

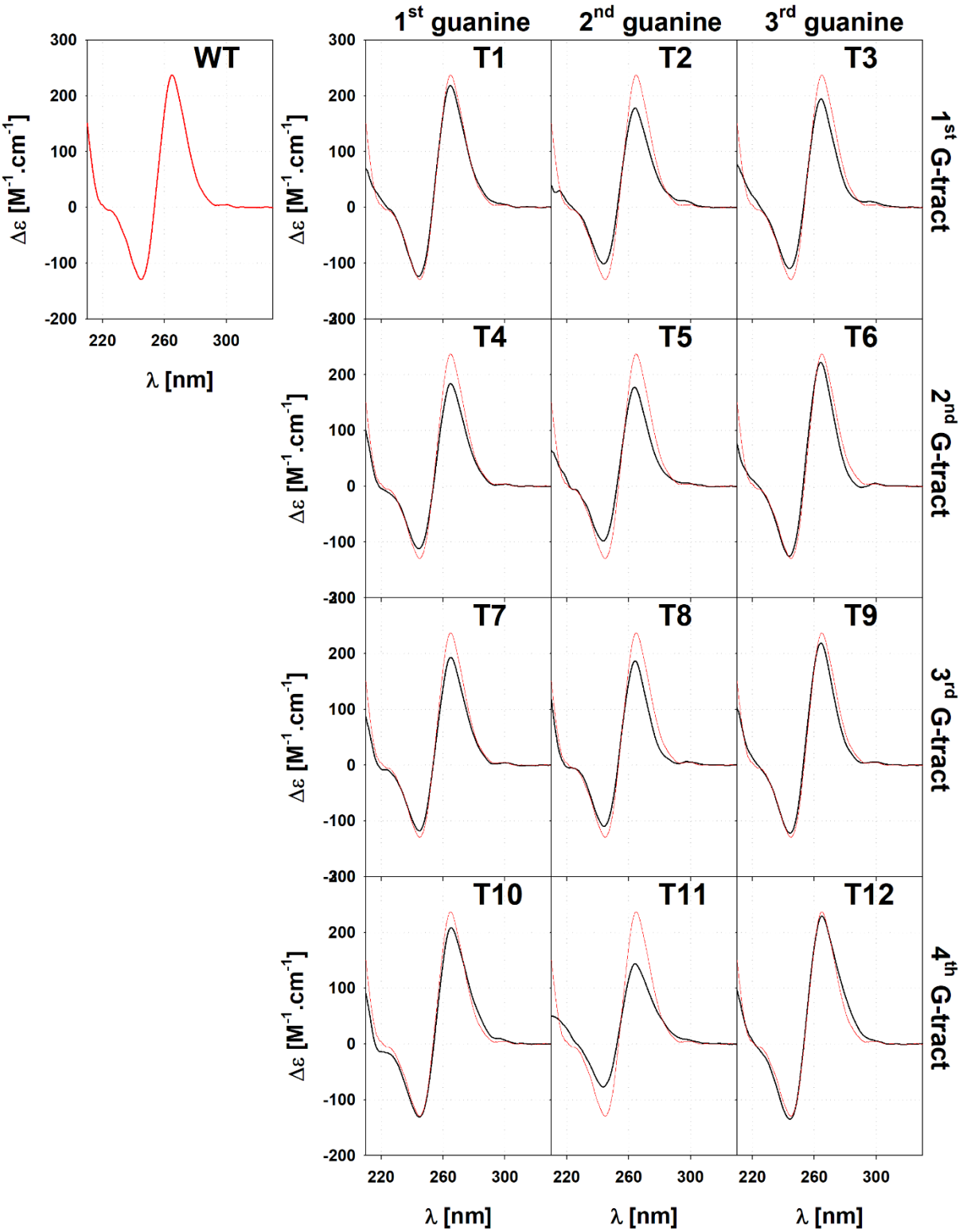


Figure S7. Averaged UV melting curves from three experiments of G/T mutated variants measured in 100K buffer and expressed as folded fraction (0-1 normalized curves) of G4 during renaturation (black) and denaturation (red). WT is not shown due to extreme thermal stability.

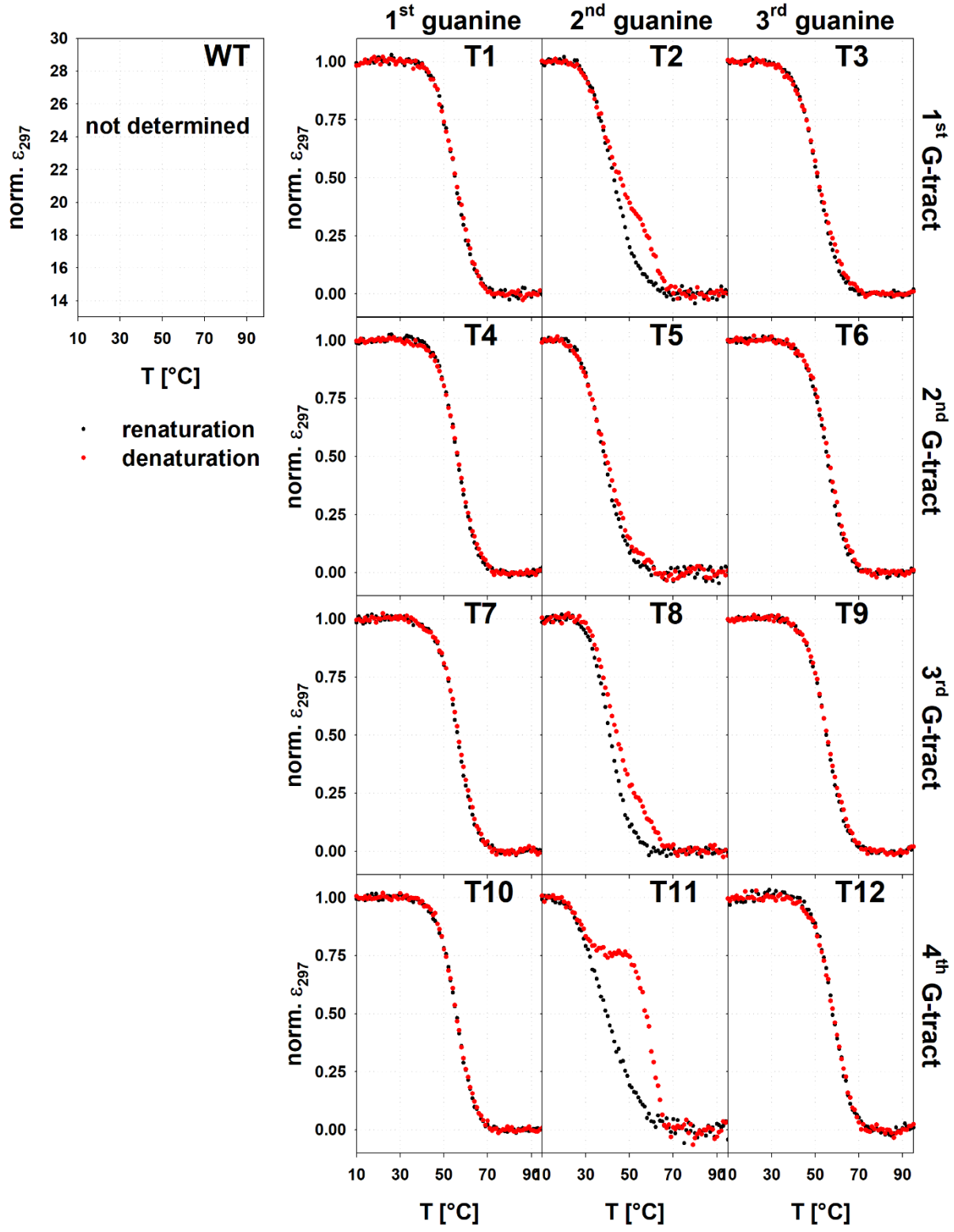


Figure S8. Native PAGE performed in 100K buffer at 20 °C (upper panel) or at 2 °C (bottom panel). Oligonucleotides were annealed in 100K buffer over 3 h from 90 °C to 20 °C or 2 °C.

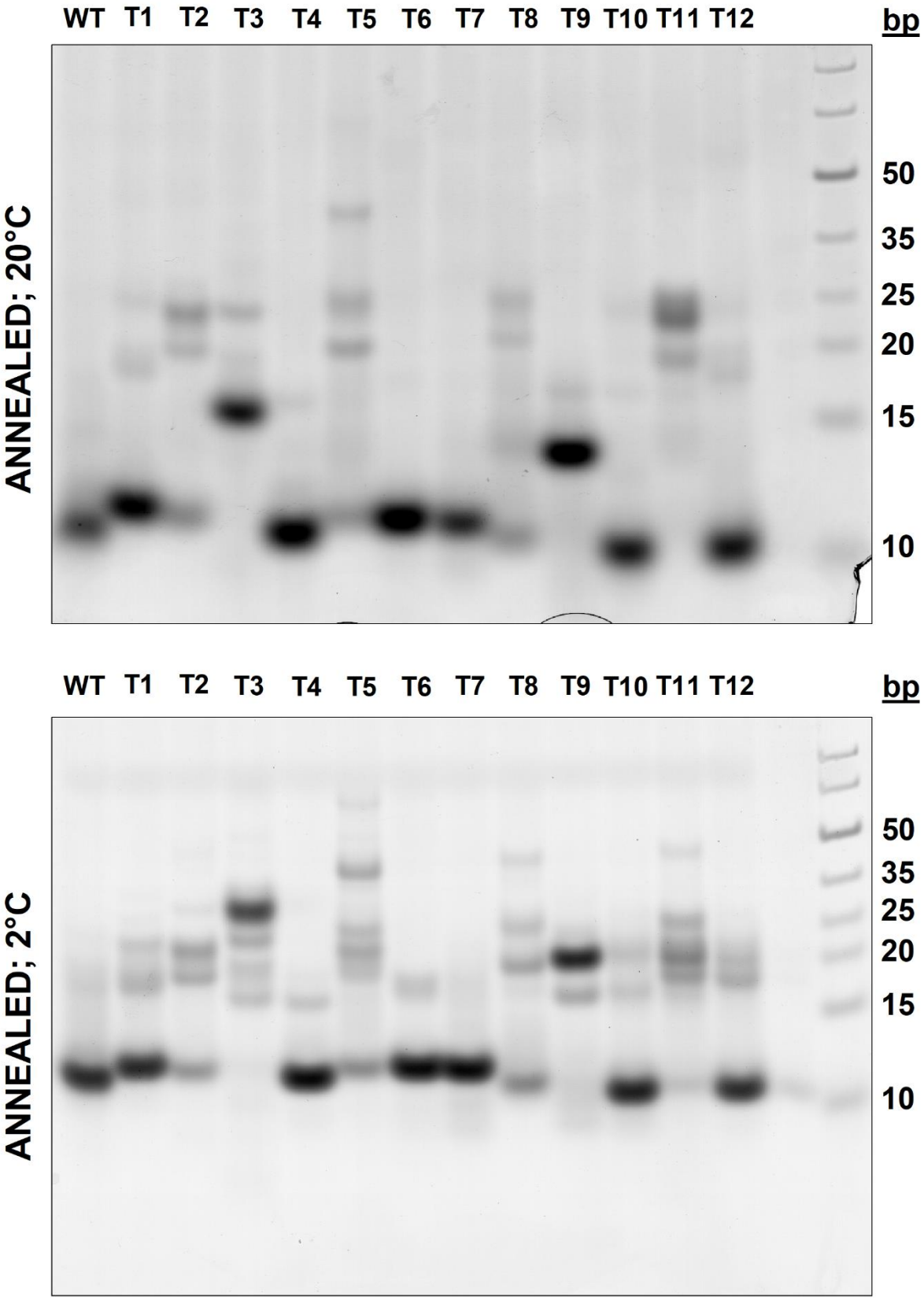
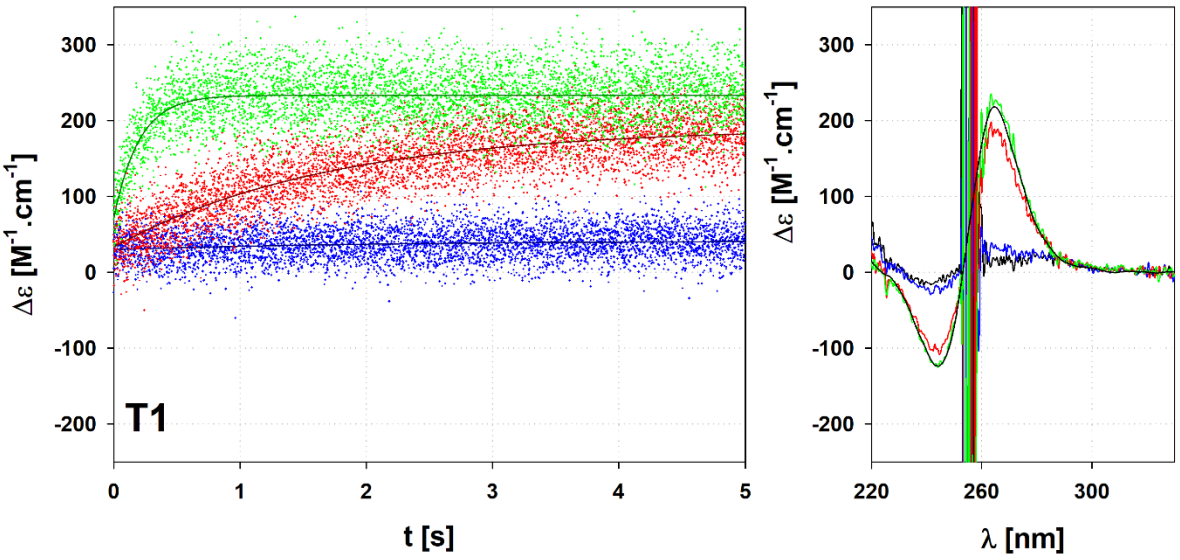
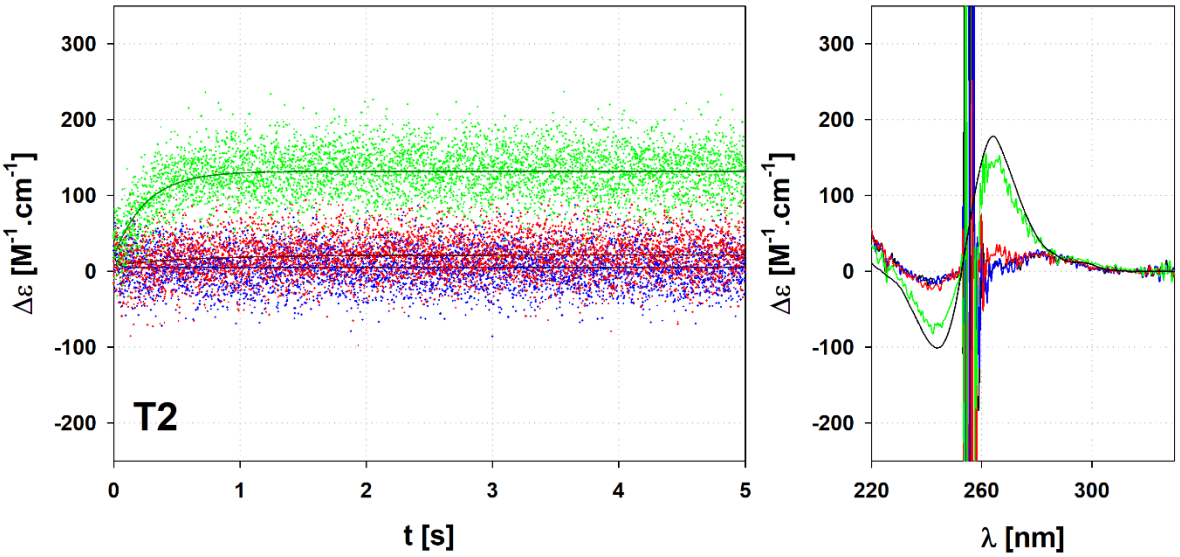
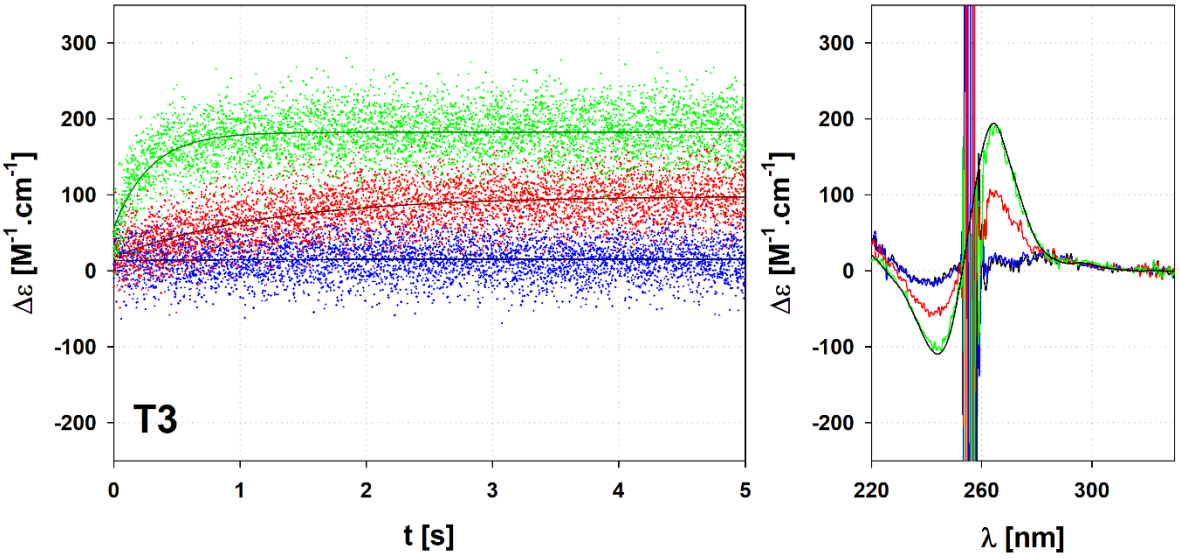
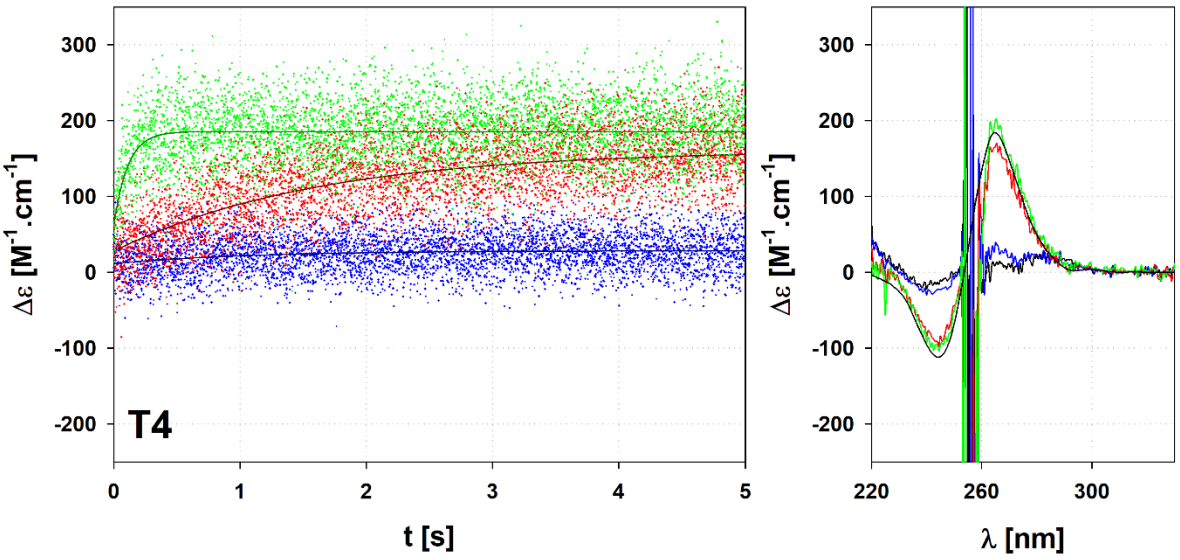


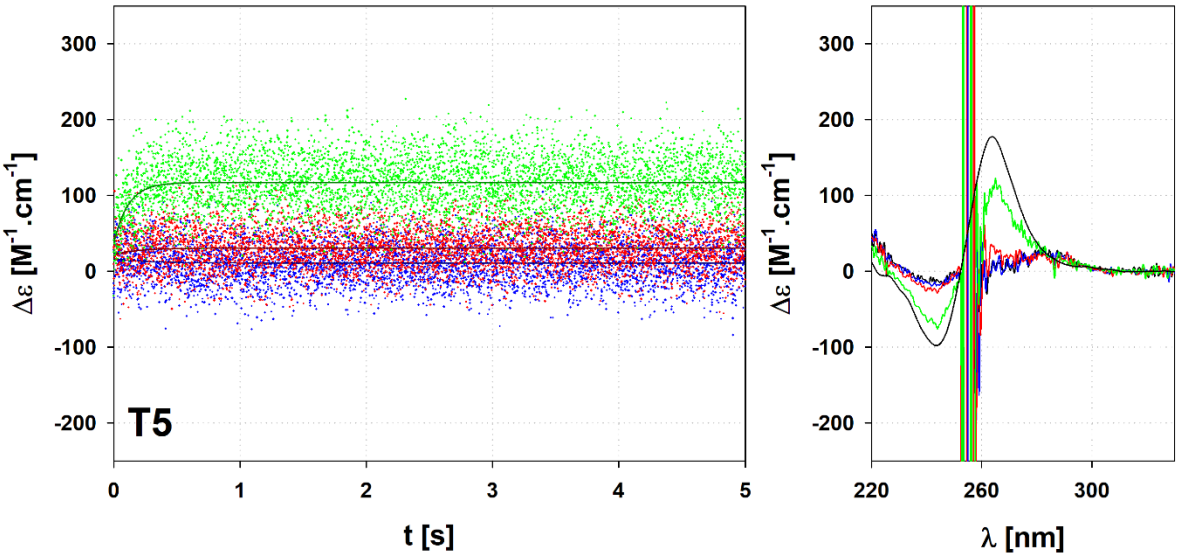
Figure S9. Left panels: Δε at 265 nm measured each millisecond for 5 s total after mixing sample with 2 mM K^+ (blue), 20 mM K^+ (red) or 200 mM K^+ (green) using a stopped-flow accessory. Black lines represent a three-parameter exponential fits ("rise-to-maximum") of the experimental points. Right panels: CD spectra of respective samples measured right after particular stopped-flow experiments. Black solid spectrum represents average of three independent measurements of sample prepared in 100K buffer by standard procedure.

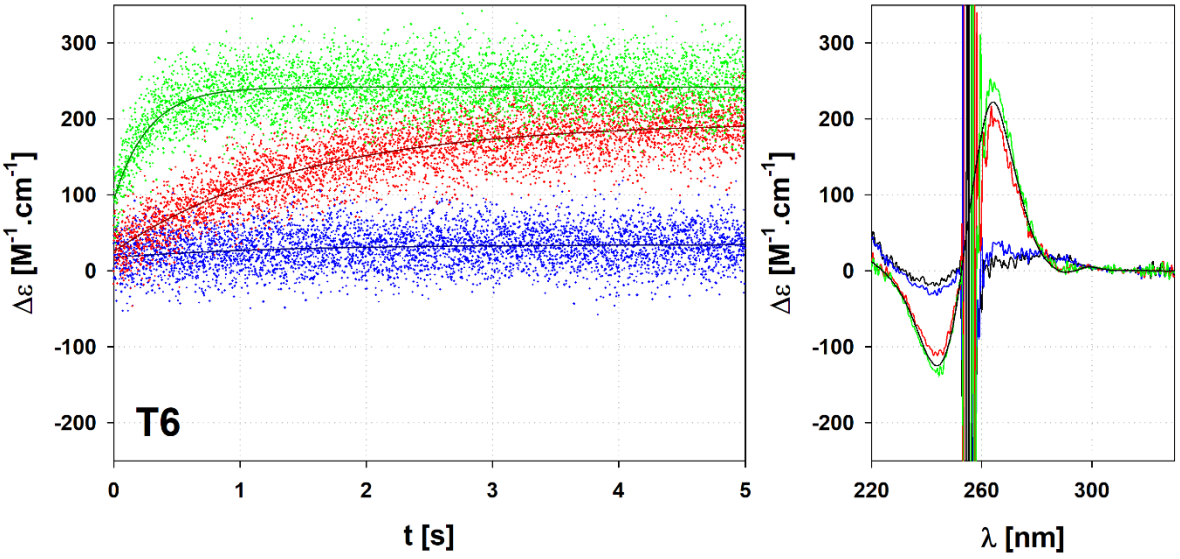

T1
Δε [M-1.cm-1]
t [s]
λ [nm]

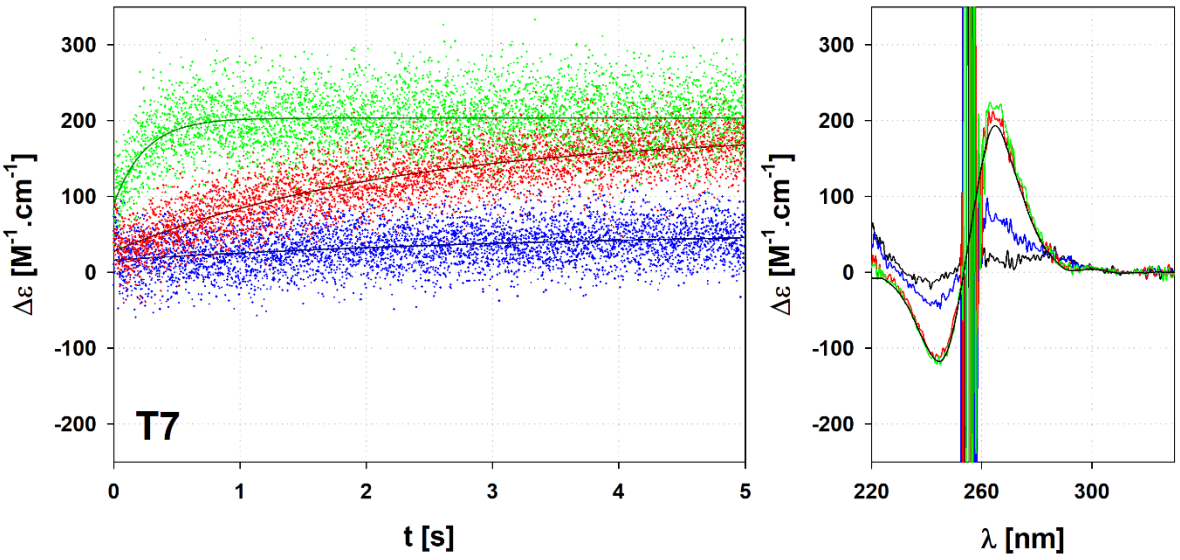

T2
Δε [M-1.cm-1]
t [s]
λ [nm]

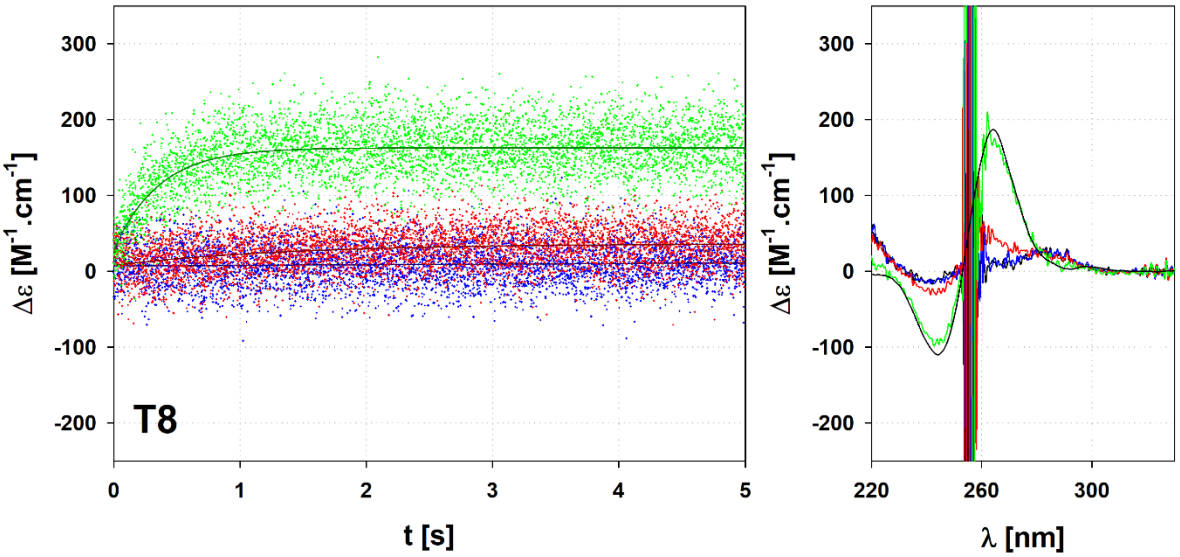

T3
Δε [M-1.cm-1]
t [s]
λ [nm]

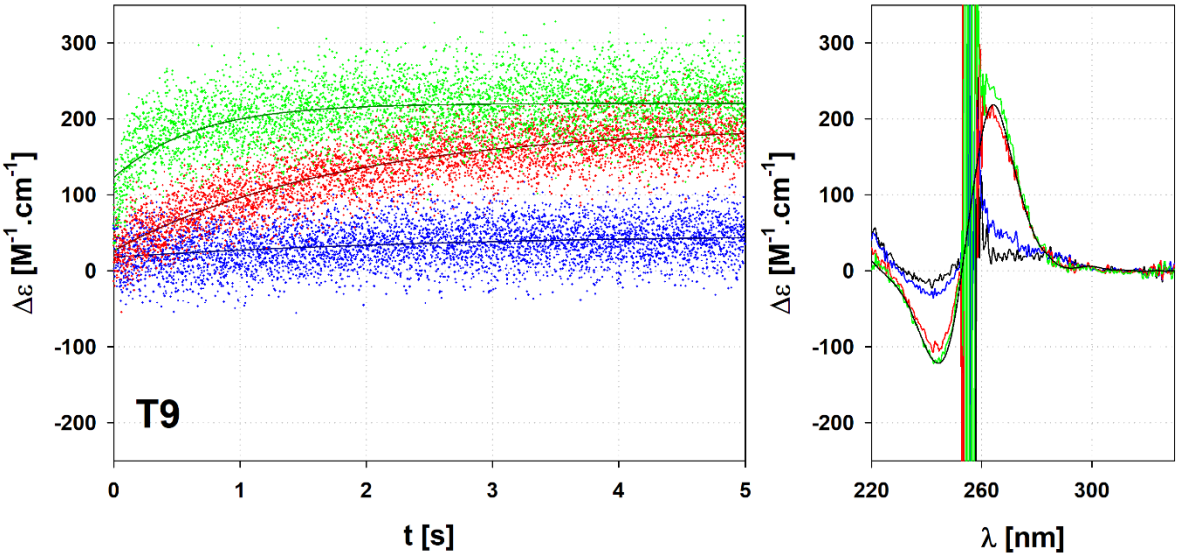

T4
Δε [M-1.cm-1]
t [s]
λ [nm]

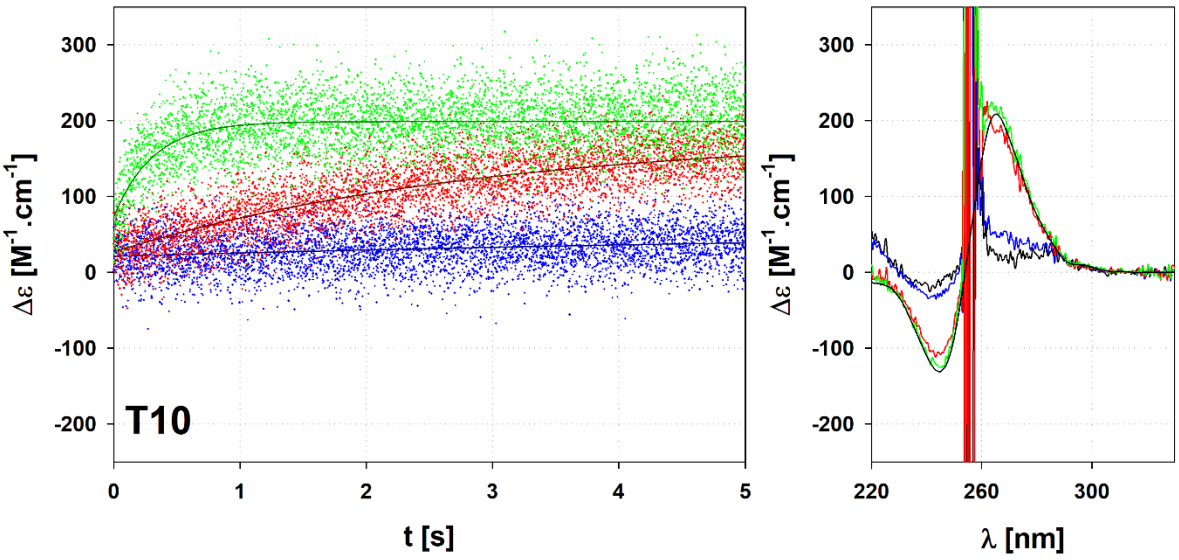

T5
Δε [M-1.cm-1]
t [s]
λ [nm]

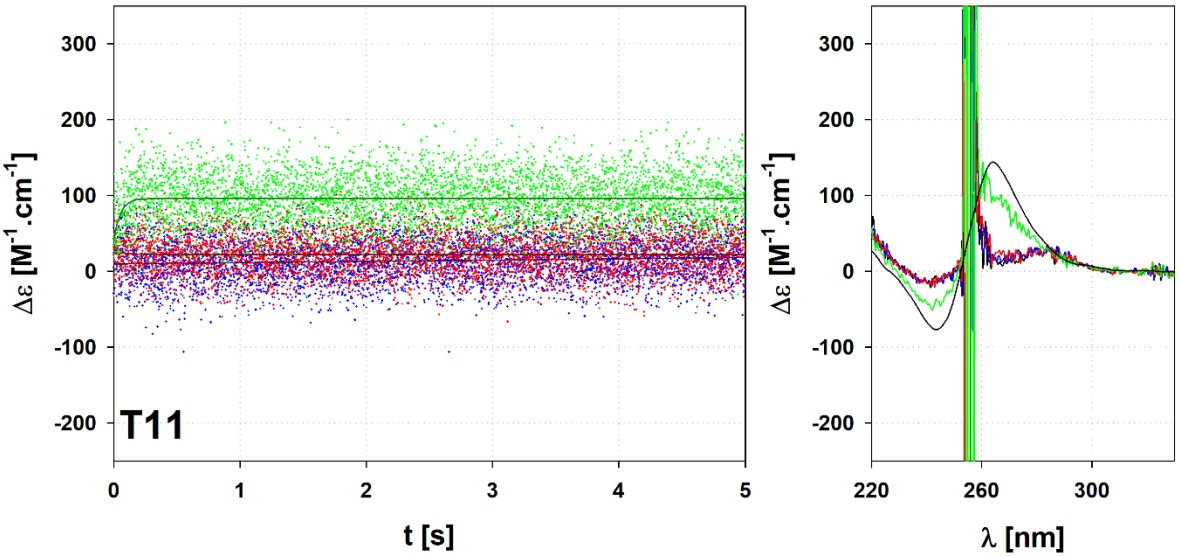

T6
Δε [M-1.cm-1]
t [s]
λ [nm]


T7
Δε [M-1.cm-1]
t [s]
λ [nm]


T8
Δε [M-1.cm-1]
t [s]
λ [nm]


T9
Δε [M-1.cm-1]
t [s]
λ [nm]


T10
Δε [M-1.cm-1]
t [s]
λ [nm]


T11
Δε [M-1.cm-1]
t [s]
λ [nm]

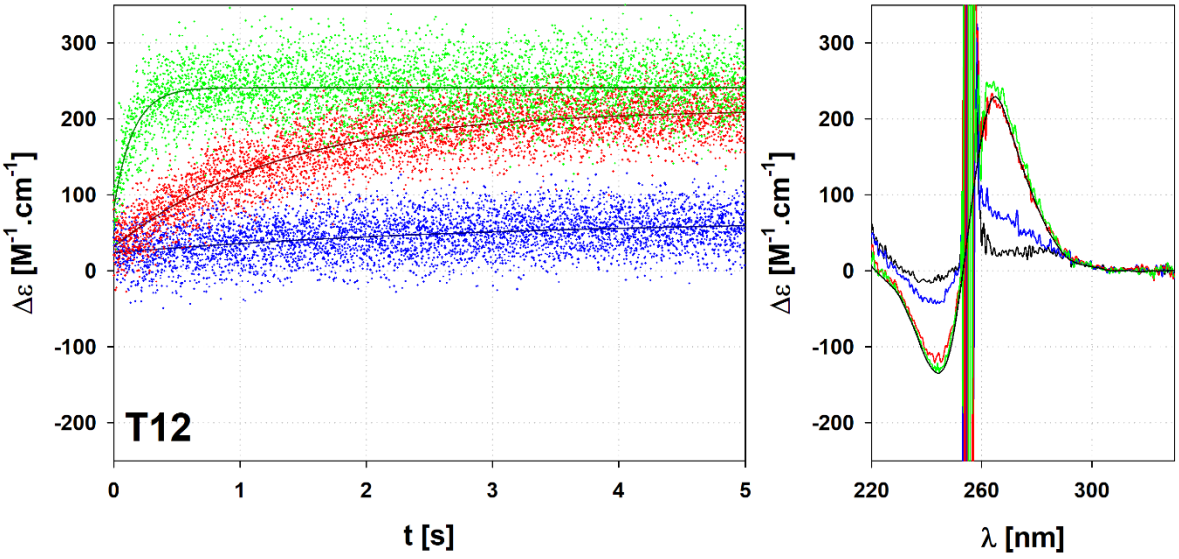

T12
Δε [M-1.cm-1]
t [s]
λ [nm]

Figure S10. The relative portion of G4 folded calculated from absorbance for all G/T mutants in 10K (top) and 100K (bottom) buffer at various times after mixing. The values are based on ε_{265}, normalized to value observed by stopped-flow experiment mixing DNA with 1NF buffer (0) and to value measured after annealing in 100K buffer (100).

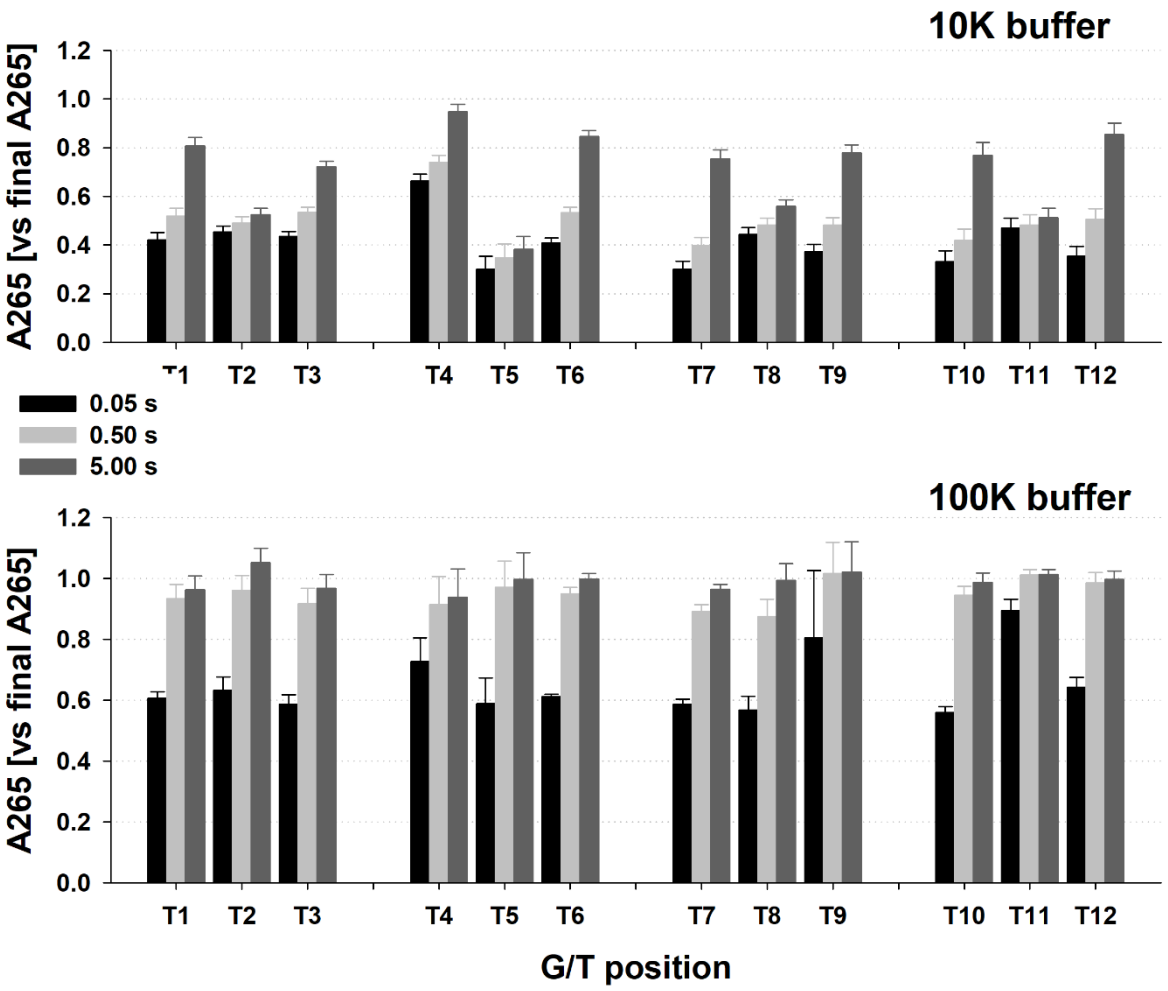


Figure S11. (**A**) The CD264 value (molar DNA strand circular dichroism (Δε) measured at 264 nm) of G to T substituted variants measured in 100K in absence (black) or presence (gray) of two equivalents of NMM. (**B**) Difference in T_m values calculated from samples with and without two equivalents of NMM from renaturation (black) or denaturation (gray) profile measured in 100K buffer. T_m of WT is not shown due to extreme thermal stability.

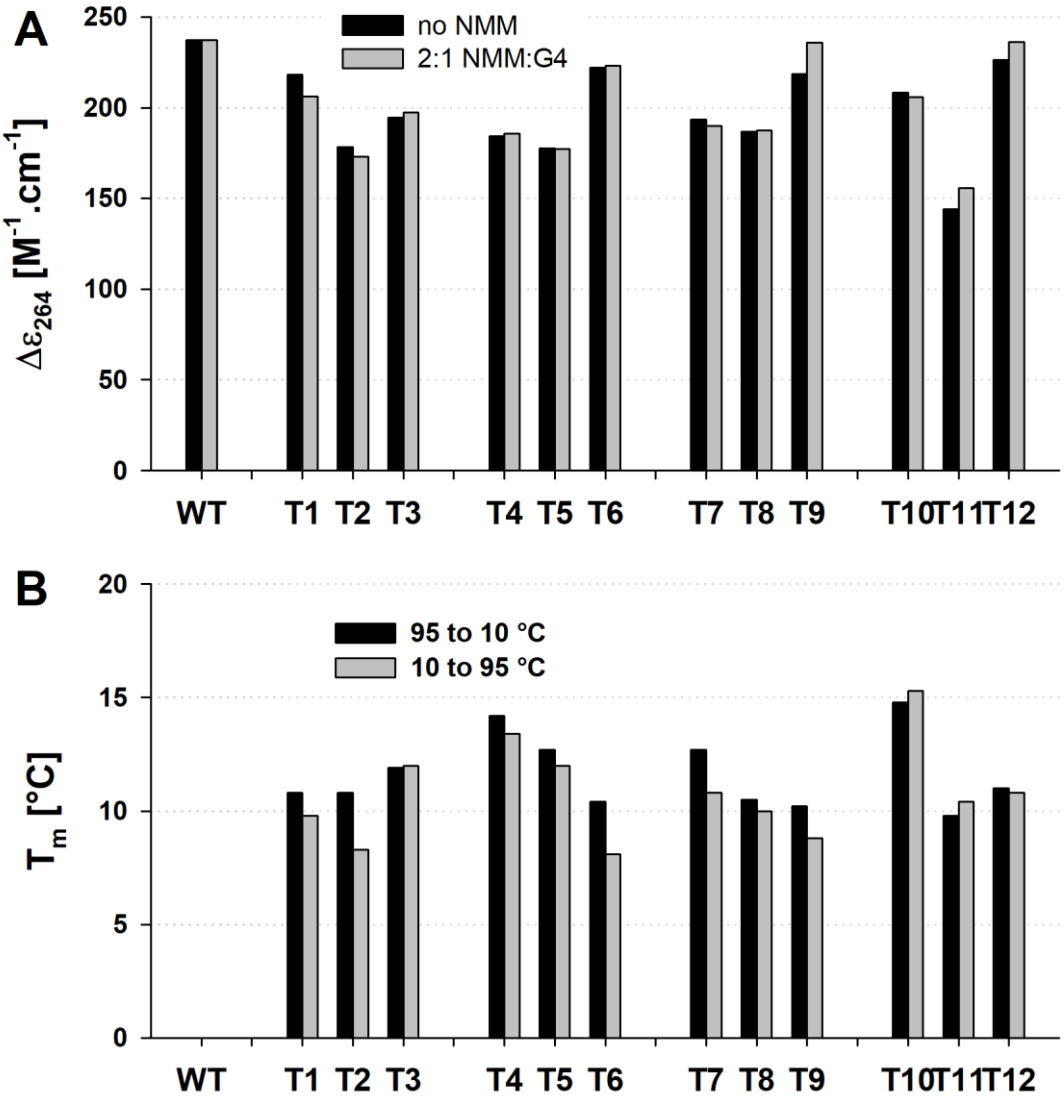


Figure S12. UV melting curves of G/T mutated variants measured in 100K buffer at various concentration and expressed as folded fraction (0-1 normalized curves) of G4 during renaturation (black) and denaturation (red). WT is not shown due to extreme thermal stability.

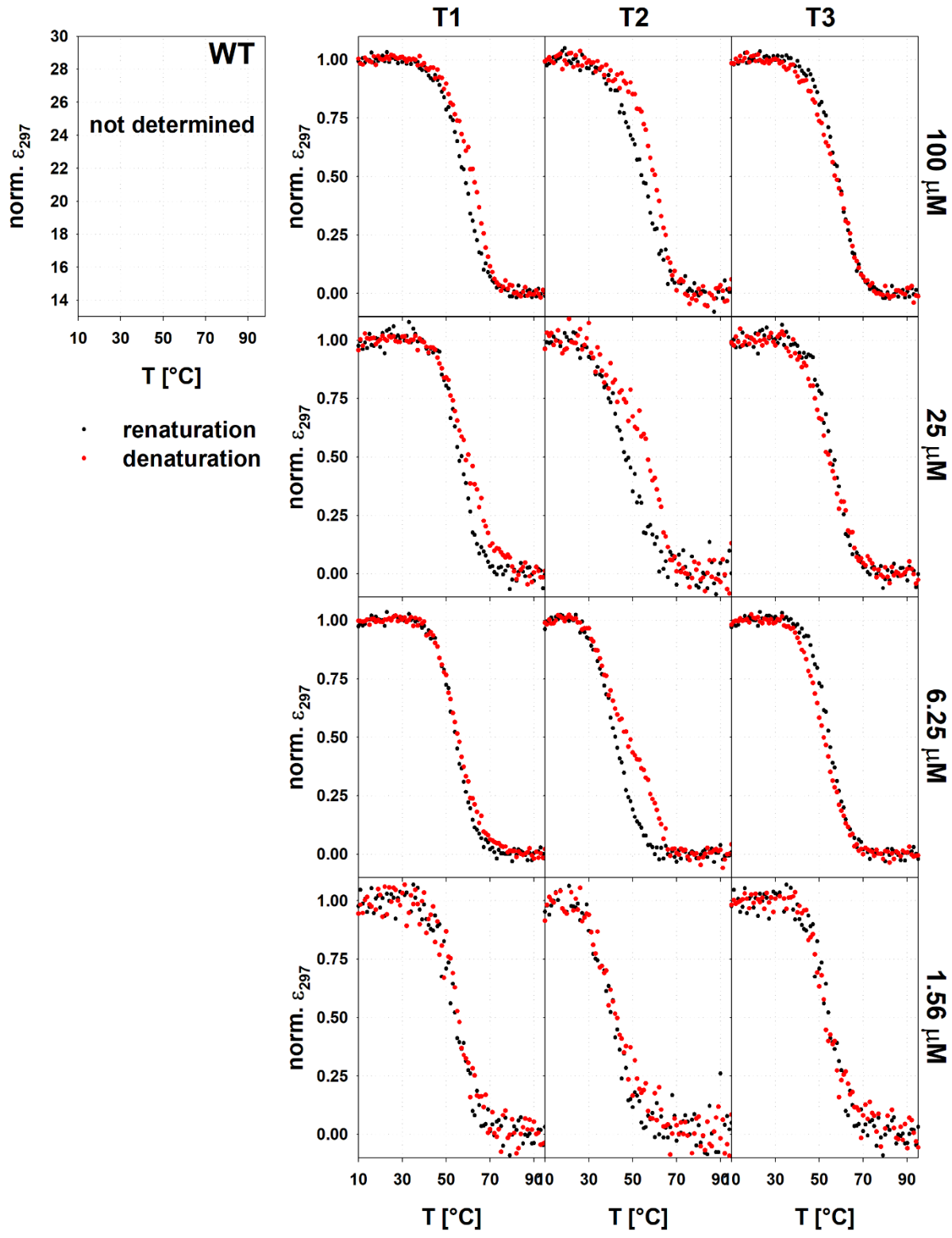


Figure S13. CD spectra of aWT (red) and G/T mutated variants (black) of model hybrid/antiparallel quadruplex measured in 100K buffer at 23 °C.

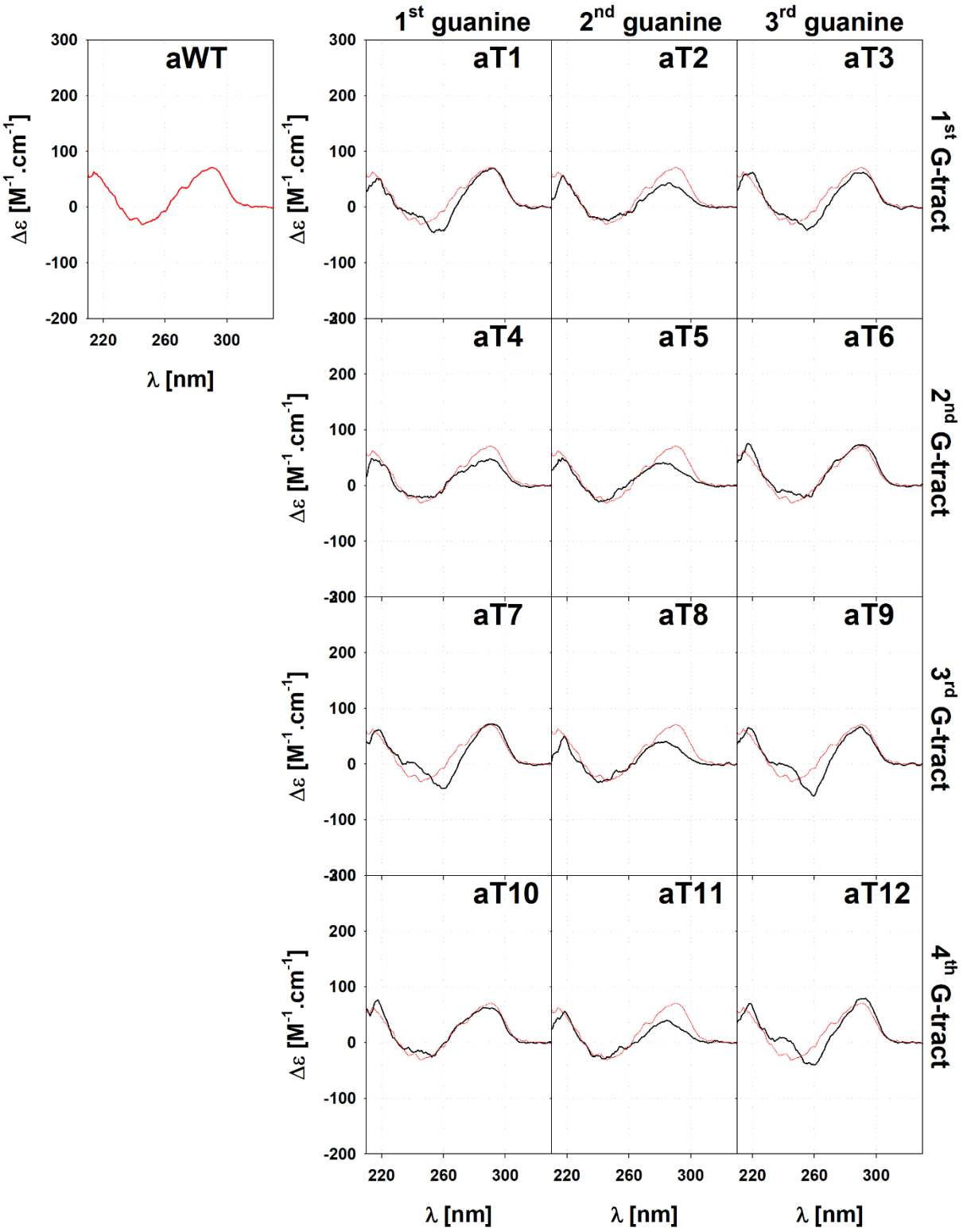


Figure S14. UV melting curves of aWT and G/T mutated variants measured in 100K buffer and expressed as folded fraction (0-1 normalized curves) of G4 during renaturation (black) and denaturation (red).