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Supplementary Information

Effect of GCAA Stabilizing Loops on Three- and Four-way Intramolecular Junctions

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Table S1. T_Ms and ΔH_{vH} obtained from UV melting curves.

	T_M (°C)	ΔH_{vH} (kcal/mol)
3WJ		
1st	28.2	-33
2nd	50.2	-33
L-3WJ		
1st	28.6	-28
2nd	75.2	-44
R-3WJ		
1st	48.0	-64
2nd	64.5	-34
4WJ		
1st	41.0	-66
L-4WJ		
1st	41.0	-76
2nd	72.2	-40
R-4WJ		
1st	42.9	-70
2nd	59.3	-29

All experiments were done in 10 mM NaPi buffer at pH 7.0. Experimental errors are as follows: T_M (± 0.5 °C), ΔH_{vH} (± 15%).

Table S2. Thermodynamic Profiles for the Folding of Intramolecular Junctions.

		T_M (°C)	ΔH_{cal} (kcal/mol)	ΔC_p (cal/mol-K)	ΔG°_5 (kcal/mol)	$T\Delta S_{cal}$ (kcal/mol)
			3WJ			
	1st	27.8	-64.5		-4.9	-59.6
	2nd	52.7	-52.6		-7.7	-44.9
16 mM Na^+	Total		-117.1	-290	-12.6	-104.5
	1st	35.6	-41.5		-4.1	-37.4
	2nd	50.6	-34.8		-4.9	-29.9
	3rd	74.6	-42.8		-8.5	-34.0
216 mM Na^+	Total		-118.8		-17.5	-101.3
			L-3WJ			
	1st	27.7	-51.2		-3.9	-47.3
	2nd	40.0	-25.3		-2.8	-22.6
	3rd	75.6	-43.8		-8.9	-34.9
16 mM Na^+	Total		-120.4	-506	-15.6	-104.8
	1st	38.0	-45.8		-4.9	-40.9
	2nd	51.9	-38.6		-5.6	-33.0
	3rd	91.8	-48.6		-11.6	-37.0
216 mM Na^+	Total		-133.0		-22.1	-110.9
			R-3WJ			
	1st	47.2	-89.8		-11.8	-78.0
	2nd	65.6	-49.0		-8.8	-40.2
16 mM Na^+	Total		-138.8	1790	-20.6	-118.2
	1st	57.2	-65.7		-10.4	-55.3
	2nd	81.9	-57.6		-12.5	-45.1
216 mM Na^+	Total		-123.3		-22.9	-100.4
			4WJ			
	1st	42.7	-63.0		-7.5	-55.5
	2nd	49.9	-71.9		-10.0	-61.9
16 mM Na^+	Total		-134.9	-1490	-17.5	-117.4
	1st	54.6	-86.3		-13.1	-73.2
	2nd	69.5	-62.5		-11.8	-57.7
216 mM Na^+	Total		-148.8		-24.9	-130.9
			L-4WJ			
	1st	40.3	-105.0		-11.8	-93.2
	2nd	75.0	-40.0		-8.0	-32.0
16 mM Na^+	Total		-145.0	-690	-19.8	-125.2
	1st	56.0	-80.5		-12.5	-68.0
	2nd	63.7	-53.5		-9.3	-44.2
	3rd	91.7	-27.4		-6.5	-20.9
216 mM Na^+	Total		-161.4		-28.3	-133.0
			R-4WJ			
	1st	41.7	-93.9		-10.9	-83.0
	2nd	55.1	-79.6		-12.1	-67.5
16 mM Na^+	Total		-173.5	1040	-23.0	-150.5
	1st	56.5	-93.3		-14.6	-78.7
	2nd	76.7	-64.9		-13.3	-51.6
216 mM Na^+	Total		-158.2		-27.9	-130.3

All experiments were done in 10 mM NaPi buffer, at pH 7.0. Experimental errors are as follows: T_M (± 0.5 °C), ΔH_{cal} (± 5 %), ΔC_p (± 20 %), ΔH_{vH} (± 15 %), $T\Delta S_{cal}$ (± 5 %), $\Delta G^\circ_{(5)}$ (± 7%).

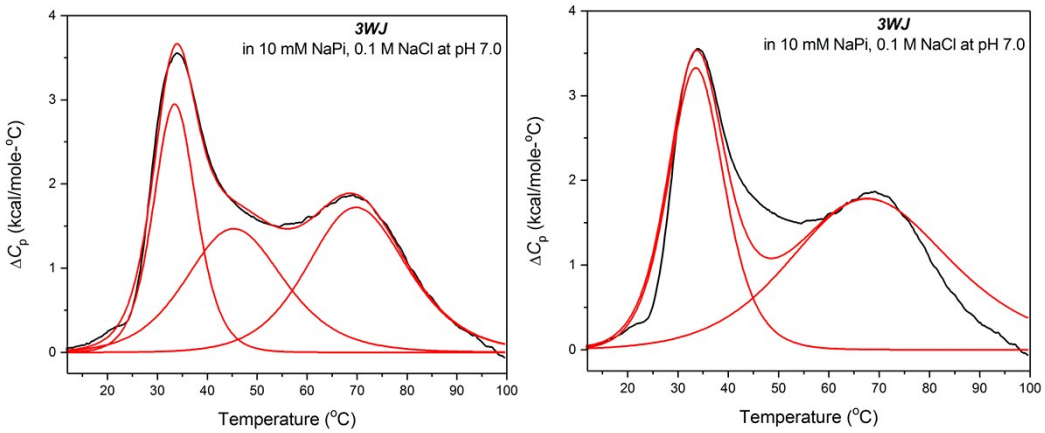

Figure S1. (Left) 3 Peak fit of the DSC thermogram for ***3WJ*** and (Right) 2 peak fit of the DSC thermogram for ***3WJ***. For the 2 peak fit, the T_M and ΔH_{vH} has been fixed to generate a reasonable second peak.

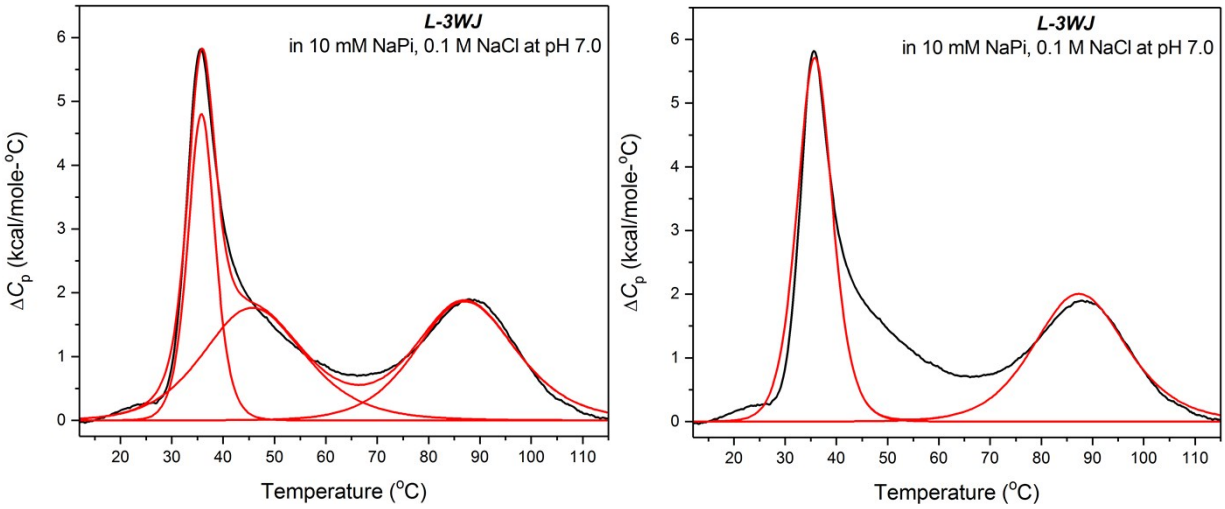

Figure S2. (Left) 3 Peak fit of the DSC thermogram for ***L-3WJ*** and (Right) 2 peak fit of the DSC thermogram for ***L-3WJ***. For the 2 peak fit, the T_M and ΔH_{vH} has been fixed to generate a reasonable second peak.

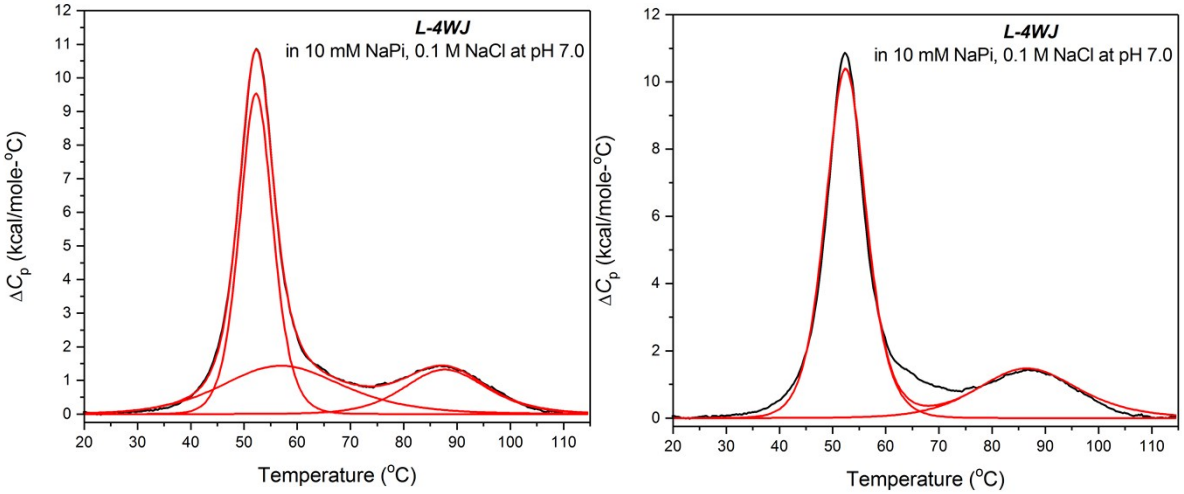

Figure S3. (Left) 3 Peak fit of the DSC thermogram for ***L-4WJ*** and (Right) 2 peak fit of the DSC thermogram for ***L-4WJ***. For the 2 peak fit, the T_M and ΔH_{vH} has been fixed to generate a reasonable second peak.

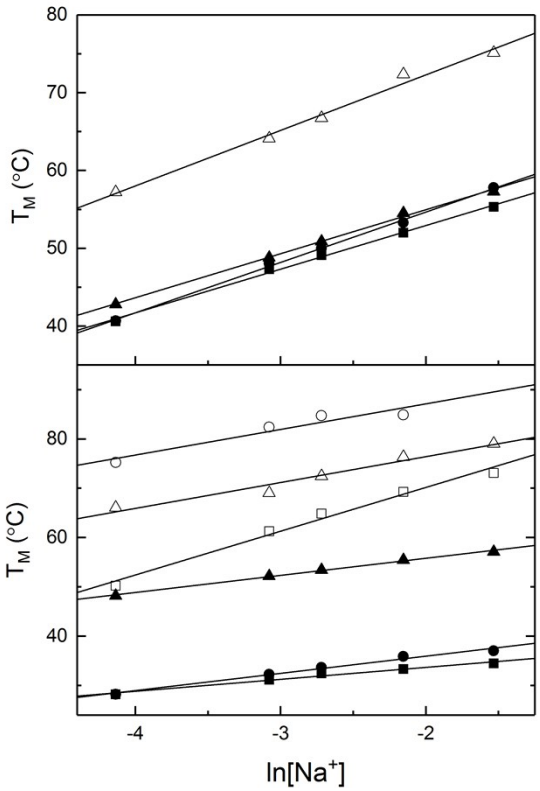

Figure S4. T_M-dependence on [Na^+] concentration at 268 nm in 10 mM NaPi, 0.1 M NaCl at pH 7.0. (Top) T_M-dependence of ***4WJ*** (circles), ***L-4WJ*** (squares) and ***R-4WJ*** (triangles). (Bottom) T_M-dependence of ***3WJ*** (circles), ***L-3WJ*** (squares) and ***R-3WJ*** (triangles). Closed symbols correspond first transitions while open symbols correspond to second transitions.

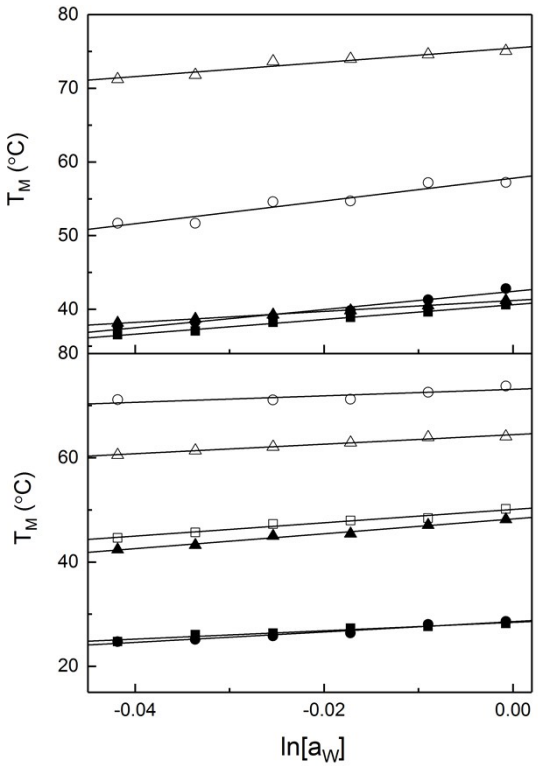

Figure S5. T_M-dependence on ethylene glycol concentration at 268 nm in 10 mM NaPi, 0.1 M NaCl at pH 7.0. (Top) T_M-dependence of ***4WJ*** (circles), ***L-4WJ*** (squares) and ***R-4WJ*** (triangles). (Bottom) T_M-dependence of ***3WJ*** (circles), ***L-3WJ*** (squares) and ***R-3WJ*** (triangles). Closed symbols correspond first transitions while open symbols correspond to second transitions.