

SI Table 3: Kinetic parameters from fitting chevron plots for CTPRa2 fit to a 2 state model and CTPRa3 to CTPRa10 proteins fit to 3 state sequential folding model.

CTPRa2 fit to a two state folding model

CTPRan	$k_F^{H_2O}$ (s ⁻¹)	$m_{\ddagger-U}$ (M ⁻¹)	$k_U^{H_2O}$ (s ⁻¹)	$m_{\ddagger-F}$ (M ⁻¹)	^a $\Delta G_{U-F}^{H_2O}$ (kcal mol ⁻¹)
2	2080 ± 400	2.1 ± 0.2	14 ± 4	1.2 ± 0.1	2.8 ± 0.4

CTPRa3 to CTPRa10 proteins fit to 3 state sequential folding model

CTPRan	k_{UI} (s ⁻¹)	m_{UI} (M ⁻¹)	k_{IU} (s ⁻¹)	m_{IU} (M ⁻¹)	k_{IN} (s ⁻¹)	m_{IN} (M ⁻¹)	k_{NI} (s ⁻¹)	m_{NI} (M ⁻¹)	^b $\Delta G_{U-N}^{H_2O}$ (kcal mol ⁻¹)
3	1.8 × 10 ⁴ ± 2.4 × 10 ⁴	-2.3 ± 0.6	14 ± 9	1.0 ± 0.2	490 ± 48	-0.6 ± 0.1	0.06 ± 0.09	2.9 ± 0.6	9.1 ± 2.1
4	2.6 × 10 ⁴ ± 2.9 × 10 ⁴	-2.3 ± 0.4	28 ± 24	0.6 ± 0.2	275 ± 15	-0.2 ± 0.1	0.007 ± 0.01	3.2 ± 0.6	9.8 ± 2.2
5	7700 ± 5700	-1.9 ± 0.3	5 ± 4	1.0 ± 0.2	210 ± 9	-0.1 ± 0.05	0.002 ± 0.01	3.5 ± 0.8	10.6 ± 2.7
6	1.3 × 10 ⁴ ± 6500	-2.1 ± 0.2	6 ± 2	0.9 ± 0.1	220 ± 9	-0.2 ± 0.04	1.2 × 10 ⁻⁶ ± 3.1 × 10 ⁻⁶	5.6 ± 0.8	15.0 ± 2.6
8	3800 ± 850	-1.5 ± 0.1	3.0 ± 0.6	1.0 ± 0.04	190 ± 6	-0.03 ± 0.04	9.9 × 10 ⁻¹⁰ ± 2.6 × 10 ⁻⁹	7.3 ± 0.7	18.6 ± 2.6
10	6400 ± 1800	-1.7 ± 0.1	2.9 ± 0.6	0.9 ± 0.04	150 ± 6	0.04 ± 0.04	2.6 × 10 ⁻¹² ± 9.5 × 10 ⁻¹²	9.0 ± 1.0	22.2 ± 3.7

The errors reported are from the fitting of the experimental data. Data fitted to either two or three state on pathway model as per *SI Appendix*. ^aCalculated from $\Delta G_{U-F}^{H_2O} = -RT \ln(k_U^{H_2O}/k_F^{H_2O})$. ^bCalculated from $\Delta G_{U-N}^{H_2O} = -RT \ln(k_{IU}^{H_2O}k_{NI}^{H_2O}/k_{UI}^{H_2O}k_{IN}^{H_2O})$.