



Supplemental Figure 1 (Related to Figure 6), Tryptophan fluorescence raw data. Each protein sample was excited at 280 nm and the emission spectra were recorded from 300-400 nm in 1 nm steps for each pH. The signal at 321 nm corresponded to monomer state, and the signal at 338 nm corresponded to the dimer state. The ratio of these two signals was used to compare the WT and mutants at each pH step. Three replicates were collected at each pH increment for each mutant and error bars correspond to standard error.

Supplementary Table 1. Comparison of intermolecular contacts at the ^{Nc}NTD and ^{Ea}NTD interfaces

Nc_A	Nc_B	Ea_B	Ea_A
D40	K65	T43	R60
K65	D39	S51	S51
D36	K60	S76	A68
T47	K54	S47	S51
S62	D40	S51	S47
D46	K54	E79	Q67
A68	S76	R60	Q46
S75	A72	N133	N113
E119	S130	K65	D39
I44	L69	L55	S47
T47	T47	R60	T43
E119	M126	M71	E79
M126	E119	E84	N64
T47	A51	M126	M126
A51	T47	A130	E119
G64	D40	D40	K65
K65	D40	T43	L55
A68	E79	L55	T43
L69	I44	N64	E84
M71	F127	K65	D40
A72	A72	N67	E79
S75	S75	A68	S76
S76	A72	A68	E79
E79	A68	A68	I80
L123	L123	M71	F127
F127	E119	A72	A72
D40	M55	S75	S75
T47	T50	E79	A68
I48	T47	E79	M71
Q67	V83	I80	A68
A68	I44	E119	F127
L69	T47	E119	A130
A72	S76	M126	L123
S76	L69	F127	M71
I80	M55	F127	E119
N115	S130	I44	A68
L123	S75	M48	A72
M126	S122	S83	Q67
F127	M71	Q122	M126
F127	S75	L123	M126
F127	I120	G131	E119
T43	K54	M132	Q67
M55	T43	M132	W10
G64	E84	M132	F116
K65	T43	N133	W10
Q67	E79	D134	T8
A68	I80	N64	D40
E79	M71	K65	T43
E119	F127	L69	I44
M126	L123	S75	A72
		S76	A72
		L123	L123

KEY:
 Salt bridges are shaded blue
 Hydrogen bonds are outlined in bold
 Symmetric contacts are shaded yellow
 Unique contacts are colored red

Supplementary Table 2. Summary of intermolecular contacts at the ^{Nc}NTD and ^{Ea}NTD interfaces

^{Nc} NTD Intermolecular Contacts							
		Unique		Shared		Total	
		Number	%	Number	%	Number	%
All		22	44.0%	28	56.0%	50	100.0%
	Symmetric	4	18.2%	13	46.4%	20	40.0%
	Asymmetric	18	81.8%	15	53.6%	30	60.0%
Involve H2,H3							
		16	40.0%	24	60.0%	40	80.0%
	Symmetric	2	12.5%	13	54.2%	15	37.5%
	Asymmetric	14	87.5%	11	45.8%	25	62.5%
Involve H5							
		8	57.1%	6	42.9%	14	28.0%
	Symmetric	2	25.0%	3	50.0%	5	35.7%
	Asymmetric	6	75.0%	3	50.0%	9	64.3%

^{Ea} NTD Intermolecular Contacts							
		Unique		Shared		Total	
		Number	%	Number	%	Number	%
All		22	42.3%	30	57.7%	52	100.0%
	Symmetric	9	40.9%	23	76.7%	32	61.5%
	Asymmetric	13	59.1%	7	23.3%	20	38.5%
Involve H2,H3							
		13	32.5%	25	62.5%	38	73.1%
	Symmetric	7	53.8%	19	76.0%	26	68.4%
	Asymmetric	6	46.2%	6	24.0%	12	31.6%
Involve H5							
		11	78.6%	7	50.0%	18	34.6%
	Symmetric	2	18.2%	6	85.7%	8	44.4%
	Asymmetric	9	81.8%	1	14.3%	10	55.6%