Supplementary Information

Guanine nucleotides differentially modulate backbone dynamics of the STAS domain of the SulP/SLC26 transport protein Rv1739c of *M. tuberculosis*

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Figure S1: Sequence-specific rotational correlation times (τ_e) determined using filtered data sets of experimental ^{15}N relaxation rates R_1 and R_2 of free STAS, GTP-bound STAS, and GDP-bound STAS. Filtering criteria are as detailed in Materials and Methods. STAS secondary structure is at top.

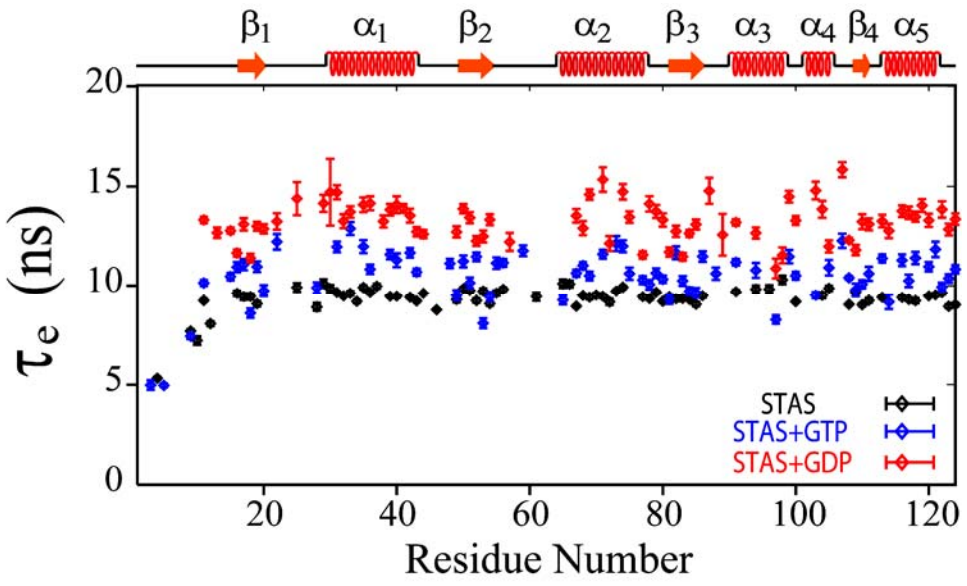

Figure S2: Residues with assigned models 1 to 5 obtained from deduction of model-free parameters from Rv1739c STAS ^{15}N backbone relaxation data

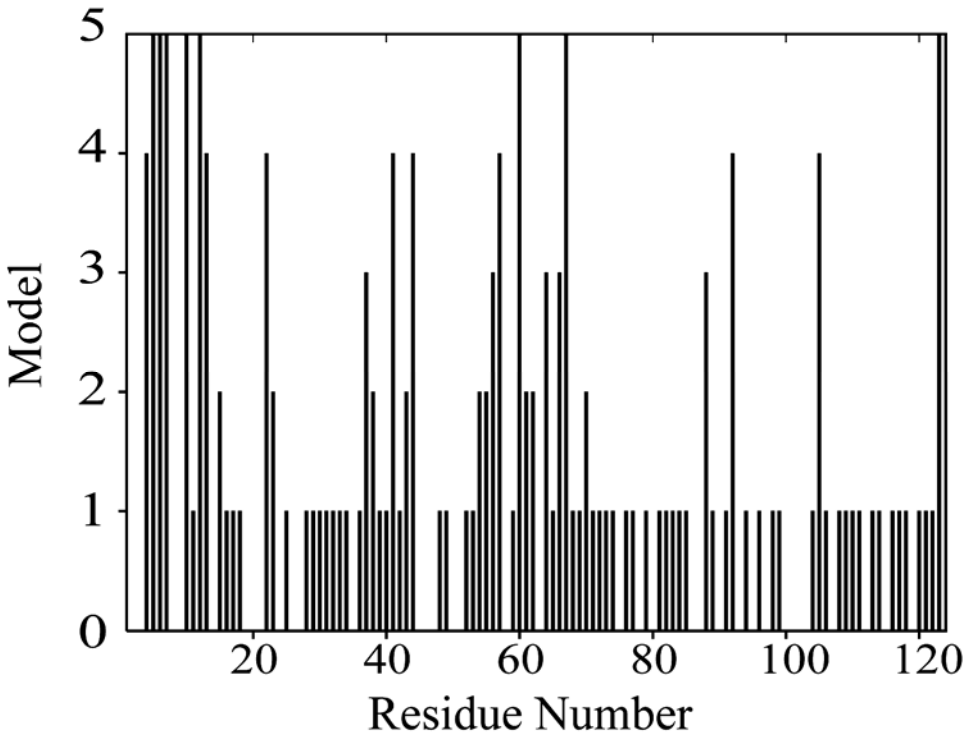

Table S1: ^{15}N backbone relaxation data measured at 600.13 MHz and 300 K. Residue-specific longitudinal relaxation rate R_1 (sec^{-1}), transverse relaxation rate R_2 (sec^{-1}), and {^{1}H}-^{15}N heteronuclear NOE of Rv1739c STAS in free-state and in complex with saturated concentrations of GTP and GDP. Errors in parameter measurement are shown as δparameter**.**

	STAS						STAS+GTP						STAS+GDP					
Res	R_1	δR_1	R_2	δR_2	**NOE**	**δNOE**	R_1	δR_1	R_2	δR_2	**NOE**	**δNOE**	R_1	δR_1	R_2	δR_2	**NOE**	**δNOE**
D3	1.34	0.08	3.21	0.16	-	-	1.65	0.11	5.76	0.11	-	-	1.44	0.08	7.45	0.18	0.54	0.10
I4	1.78	0.04	4.53	0.05	-	-	1.09	0.02	4.70	0.02	-	-	1.48	0.03	4.78	0.03	0.16	0.02
D5	1.66	0.03	4.66	0.06	0.10	0.02	1.65	0.04	5.77	0.03	0.08	0.02	1.58	0.04	5.33	0.03	0.04	0.03
D6	1.59	0.03	5.05	0.08	0.31	0.02	1.65	0.04	5.50	0.03	0.29	0.02	1.54	0.04	6.17	0.03	0.47	0.02
Y7	1.61	0.04	5.98	0.11	0.42	0.04	1.51	0.02	6.28	0.05	0.30	0.02	1.41	0.02	6.87	0.05	0.40	0.03
Q9	1.61	0.05	8.90	0.17	0.81	0.03	1.24	0.04	7.96	0.10	0.84	0.04	0.98	0.03	8.57	0.07	0.26	0.02
A10	1.50	0.08	7.05	0.37	0.65	0.03	1.62	0.03	8.50	0.07	0.46	0.02	1.38	0.02	8.11	0.07	0.39	0.02
K11	1.39	0.04	13.03	0.34	0.79	0.02	1.22	0.03	13.33	0.20	0.75	0.02	1.03	0.02	18.65	0.44	0.80	0.03
R12	1.48	0.06	9.32	0.29	0.66	0.07	1.34	0.03	8.97	0.10	0.49	0.03	1.28	0.02	10.18	0.13	0.35	0.03
V13	1.36	0.07	14.75	0.74	0.55	0.06	1.29	0.06	11.04	0.34	0.55	0.04	1.10	0.04	18.12	0.60	0.84	0.07
G15	1.34	0.04	12.22	0.33	0.64	0.03	1.21	0.04	13.99	0.30	0.68	0.03	0.99	0.02	16.50	0.36	0.83	0.04
L16	1.37	0.04	14.47	0.59	0.79	0.03	1.35	0.06	16.96	0.42	0.81	0.04	1.06	0.03	14.98	0.40	0.80	0.04
V17	1.33	0.06	13.26	0.67	0.99	0.05	1.25	0.06	16.07	0.57	0.85	0.05	1.05	0.04	18.41	0.75	0.78	0.06
V18	1.31	0.05	13.16	0.57	0.77	0.03	1.33	0.06	10.85	0.39	0.97	0.06	1.02	0.03	13.81	0.49	0.65	0.05
Y19	1.33	0.05	11.77	0.47	0.97	0.03	1.28	0.06	16.13	0.58	1.00	0.04	1.04	0.03	17.95	0.58	0.77	0.05
R20	1.36	0.06	8.88	0.42	0.92	0.04	1.38	0.07	14.01	0.29	0.91	0.04	1.05	0.04	17.71	0.54	0.70	0.05
Y21	1.42	0.07	20.91	1.37	0.90	0.05	1.24	0.07	28.85	2.55	0.69	0.06	0.97	0.06	25.53	3.27	0.84	0.09
D22	1.39	0.07	15.22	0.98	0.61	0.03	1.42	0.08	21.79	1.28	0.79	0.04	1.11	0.06	19.84	1.09	0.91	0.07
A23	1.16	0.02	11.16	0.29	0.69	0.03	1.05	0.03	13.52	0.25	0.38	0.03	0.93	0.02	14.54	0.28	0.48	0.04
L25	1.38	0.07	16.04	0.82	0.76	0.03	-	-	15.90	0.44	1.12	0.09	1.07	0.05	22.41	2.47	0.77	0.06
C26	1.42	0.07	33.40	3.52	0.81	0.09	0.66	0.02	16.81	0.89	0.74	0.07	1.01	0.07	26.36	2.69	0.46	0.16
A28	1.42	0.07	11.86	0.78	0.76	0.05	1.23	0.06	12.85	0.41	1.07	0.08	-	-	11.63	0.87	0.75	0.07
N29	1.39	0.06	17.23	1.13	0.84	0.04	1.09	0.04	23.89	0.90	0.75	0.05	1.09	0.06	22.11	1.28	0.84	0.06
A30	1.32	0.06	15.03	1.01	0.97	0.07	1.09	0.07	22.68	1.98	0.96	0.08	1.10	0.10	23.85	4.98	1.22	0.14
E31	1.37	0.03	14.64	0.36	0.85	0.02	1.17	0.03	17.29	0.64	0.83	0.02	0.96	0.02	20.82	0.92	0.80	0.03
D32	1.31	0.03	13.29	0.35	0.77	0.03	1.12	0.03	15.12	0.56	0.89	0.03	1.02	0.02	18.17	0.93	0.83	0.04
F33	1.31	0.04	13.78	0.54	0.86	0.02	1.20	0.06	20.28	1.00	0.89	0.04	1.04	0.04	19.76	0.79	0.80	0.04
R34	1.25	0.03	11.50	0.35	0.92	0.02	1.17	0.04	8.29	0.15	0.45	0.02	0.99	0.02	7.22	0.09	0.42	0.03

	STAS						STAS+GTP						STAS+GDP					
Res	R_1	δR_1	R_2	δR_2	**NOE**	**δNOE**	R_1	δR_1	R_2	δR_2	**NOE**	**δNOE**	R_1	δR_1	R_2	δR_2	**NOE**	**δNOE**
R35	1.30	0.04	15.22	0.50	0.97	0.03	1.32	0.05	19.60	1.01	0.77	0.03	1.05	0.03	21.05	1.06	0.89	0.05
R36	1.35	0.04	14.47	0.43	0.79	0.03	1.28	0.05	15.72	0.63	0.68	0.03	1.01	0.03	20.47	0.93	0.69	0.03
A37	1.29	0.05	15.35	0.64	0.79	0.03	1.13	0.05	18.27	0.57	0.61	0.03	0.95	0.02	9.79	0.18	0.37	0.03
L38	1.23	0.05	12.86	0.52	0.66	0.03	1.00	0.04	16.05	0.65	0.72	0.05	1.00	0.04	17.87	0.77	0.77	0.06
T39	1.29	0.02	12.92	0.28	0.84	0.02	1.19	0.03	16.51	0.65	0.78	0.02	0.95	0.02	18.38	0.75	0.87	0.03
V40	1.35	0.04	13.61	0.40	0.81	0.02	1.26	0.05	16.74	0.90	0.82	0.04	1.02	0.03	20.42	1.20	0.67	0.04
V41	1.24	0.04	13.56	0.48	0.69	0.02	1.11	0.04	16.78	0.97	0.72	0.03	0.98	0.03	19.17	0.57	1.11	0.05
D42	1.30	0.02	12.83	0.29	0.80	0.02	1.23	0.03	17.40	0.66	0.82	0.02	1.01	0.02	18.73	0.92	0.79	0.03
Q43	1.30	0.02	12.03	0.24	0.68	0.02	1.19	0.02	14.27	0.41	0.72	0.02	1.00	0.02	16.61	0.58	0.93	0.03
D44	1.28	0.02	13.48	0.29	0.69	0.02	1.27	0.02	15.18	0.40	0.60	0.02	1.02	0.02	16.64	0.53	0.81	0.03
G46	1.32	0.02	10.53	0.17	0.79	0.02	1.32	0.02	11.96	0.31	0.62	0.02	0.99	0.02	14.19	0.36	0.59	0.03
Q47	1.28	0.02	5.21	0.08	-	-	1.58	0.05	11.27	0.23	0.12	0.02	0.95	0.02	11.90	0.27	0.32	0.03
V48	1.22	0.04	12.06	0.44	0.82	0.04	1.12	0.04	14.46	0.48	0.65	0.04	0.95	0.02	15.23	0.37	0.63	0.04
E49	1.34	0.06	12.71	0.67	0.97	0.03	1.23	0.06	12.01	0.46	0.85	0.04	1.05	0.04	17.37	0.69	0.83	0.05
W50	1.32	0.04	14.97	0.45	0.96	0.03	1.31	0.06	17.20	0.40	0.90	0.03	1.07	0.03	20.84	0.61	1.03	0.04
F51	1.28	0.05	14.17	0.60	0.98	0.03	1.32	0.06	14.43	0.45	0.95	0.04	1.05	0.04	19.32	0.68	0.90	0.06
V52	1.34	0.05	12.46	0.49	0.91	0.03	1.14	0.04	15.56	0.47	1.08	0.05	1.06	0.04	16.35	0.55	0.66	0.04
L53	1.31	0.07	14.37	0.72	0.84	0.03	1.27	0.07	9.40	0.27	1.11	0.06	1.05	0.04	16.73	0.73	0.82	0.06
N54	1.45	0.05	12.82	0.52	0.75	0.03	1.48	0.07	14.21	0.46	1.04	0.04	1.08	0.04	19.51	0.66	0.82	0.05
A55	1.29	0.05	13.64	0.61	0.68	0.03	1.26	0.06	16.31	0.66	0.88	0.05	0.93	0.03	19.74	0.82	1.10	0.06
E56	1.33	0.03	15.01	0.43	0.82	0.02	1.37	0.05	17.84	0.36	0.71	0.03	1.14	0.03	18.80	0.54	0.58	0.03
S57	1.26	0.06	24.12	1.68	0.67	0.02	1.53	0.09	23.27	1.25	0.80	0.04	1.22	0.07	18.72	1.27	0.70	0.06
V59	1.45	0.08	15.95	1.10	0.72	0.06	1.17	0.05	16.76	0.37	0.80	0.04	1.13	0.04	17.08	0.40	0.60	0.04
E60	1.53	0.06	7.78	0.39	0.50	0.03	1.39	0.05	8.32	0.12	0.67	0.04	1.50	0.09	6.04	0.13	0.25	0.02
V61	1.40	0.08	13.95	1.09	0.65	0.03	1.39	0.06	-	-	0.61	0.05	1.20	0.06	-	-	0.49	0.13
D62	1.57	0.09	13.41	0.52	0.63	0.04	-	-	19.26	0.54	0.74	0.04	1.16	0.04	30.21	3.38	0.57	0.04
L63	1.37	0.06	39.42	2.87	0.83	0.06	1.34	0.06	-	-	0.94	0.05	1.01	0.05	-	-	0.69	0.07
T64	1.21	0.05	25.66	2.06	0.80	0.02	-	-	-	-	0.57	0.02	0.93	0.03	21.52	0.76	0.92	0.06
A65	1.38	0.06	17.05	1.25	0.95	0.04	1.19	0.05	11.12	0.15	0.72	0.04	1.11	0.05	-	-	0.64	0.05
L66	1.27	0.05	15.69	0.90	0.77	0.05	1.25	0.06	17.57	1.02	0.61	0.04	1.03	0.04	27.40	1.63	1.01	0.08
D67	1.33	0.02	11.27	0.23	0.75	0.02	1.31	0.03	15.62	0.47	0.77	0.02	1.12	0.05	20.88	0.76	0.79	0.08
A68	1.34	0.03	13.68	0.33	0.84	0.02	1.34	0.04	16.97	0.49	0.85	0.03	1.06	0.02	18.09	0.90	0.73	0.03

	STAS						STAS+GTP						STAS+GDP					
Res	R_1	δR_1	R_2	δR_2	**NOE**	**δNOE**	R_1	δR_1	R_2	δR_2	**NOE**	**δNOE**	R_1	δR_1	R_2	δR_2	**NOE**	**δNOE**
L69	1.34	0.04	13.21	0.50	0.95	0.03	1.16	0.04	13.51	0.49	0.79	0.04	1.01	0.03	21.62	0.71	1.10	0.06
D70	1.27	0.04	13.10	0.46	0.73	0.03	1.40	0.03	10.99	0.41	0.63	0.06	1.05	0.01	10.23	0.26	0.77	0.02
Q71	1.34	0.04	13.46	0.44	0.83	0.03	1.33	0.05	18.55	0.69	0.73	0.03	1.02	0.03	24.09	1.79	0.75	0.04
L72	1.44	0.07	13.15	0.70	0.89	0.04	1.48	0.08	20.47	1	1.25	0.08	1.1	0.05	16.70	0.95	0.80	0.07
R73	1.33	0.04	14.60	0.41	0.82	0.03	1.28	0.05	19.34	1.13	0.70	0.03	1.05	0.03	25.78	1.34	0.80	0.05
T74	1.32	0.03	15.42	0.45	0.79	0.02	1.27	0.05	18.88	0.88	0.81	0.03	0.98	0.03	21.43	1.05	0.96	0.04
E75	1.35	0.02	21.98	1.64	0.87	0.02	1.29	0.05	15.36	0.82	0.71	0.03	1.05	0.03	19.23	0.77	0.84	0.04
L76	1.45	0.03	17.34	1.07	0.61	0.07	1.64	0.05	17.18	0.45	0.35	0.02	1.43	0.02	30.97	1.56	1.01	0.06
L77	1.32	0.04	13.15	0.42	0.91	0.02	1.28	0.04	14.41	0.33	0.97	0.04	1.07	0.03	14.89	0.42	0.88	0.04
R78	1.34	0.03	12.96	0.32	0.91	0.02	1.35	0.05	14.57	0.62	0.74	0.02	1.05	0.02	21.08	1.08	0.81	0.03
R79	1.30	0.03	13.93	0.39	0.87	0.02	1.27	0.04	15.15	0.60	0.86	0.03	1.00	0.02	19.21	0.85	0.80	0.04
G80	1.33	0.03	12.29	0.28	0.94	0.02	1.31	0.04	14.81	0.33	0.75	0.03	1.00	0.02	18.12	0.82	0.94	0.03
I81	1.27	0.05	12.77	0.45	0.94	0.03	1.37	0.06	12.82	0.28	0.95	0.04	1.02	0.03	14.50	0.53	0.79	0.06
V82	1.27	0.05	12.18	0.55	0.89	0.03	1.34	0.07	18.89	0.85	0.94	0.04	0.93	0.03	15.55	0.64	0.84	0.06
F83	1.30	0.04	12.53	0.50	0.82	0.03	1.32	0.06	14.70	0.36	0.85	0.03	1.01	0.03	13.82	0.45	0.97	0.04
A84	1.34	0.03	12.75	0.34	0.87	0.03	1.33	0.05	13.53	0.31	0.82	0.03	1.04	0.03	16.98	0.39	0.98	0.04
M85	1.33	0.05	11.64	0.45	0.84	0.04	1.30	0.06	13.00	0.38	0.66	0.04	0.98	0.03	17.09	0.60	0.67	0.05
A86	1.32	0.05	13.39	0.38	0.98	0.03	1.17	0.05	16.00	0.44	0.70	0.04	1.06	0.03	18.81	0.54	0.64	0.05
R87	1.36	0.06	23.69	1.82	0.53	0.04	0.98	0.04	16.98	0.95	1.02	0.08	0.98	0.05	21.51	1.83	1.04	0.10
V88	1.20	0.05	17.21	1.08	0.90	0.04	1.22	0.06	14.53	0.41	0.77	0.04	0.91	0.04	21.59	1.21	0.91	0.09
K89	1.41	0.10	16.71	1.22	0.59	0.07	1.86	0.16	22.53	3.12	0.66	0.08	1.13	0.08	18.31	2.77	1.51	0.35
D91	1.46	0.04	15.76	0.46	0.88	0.03	1.36	0.03	17.80	0.31	0.79	0.02	1.09	0.02	19.38	0.43	0.76	0.03
L92	1.35	0.07	18.40	1.12	0.65	0.03	1.36	0.06	21.15	0.70	0.62	0.04	1.07	0.03	28.23	1.71	0.82	0.06
R93	1.31	0.06	28.56	1.97	1.05	0.09	1.5	0.11	31.69	2.61	0.64	0.07	1.12	0.08	8.56	0.58	0.78	0.10
E94	1.36	0.06	15.43	1.02	0.81	0.04	1.42	0.09	17.37	0.65	0.92	0.04	1.17	0.05	19.22	0.75	0.96	0.06
L96	1.35	0.06	15.27	1.03	0.83	0.07	1.39	0.08	30.20	1.37	0.76	0.05	1.40	0.06	10.40	0.16	0.61	0.05
R97	1.36	0.06	25.14	1.66	0.83	0.07	1.22	0.05	9.33	0.24	1.03	0.05	1.19	0.07	14.75	1.19	0.97	0.07
A98	1.38	0.06	18.16	1.21	0.74	0.06	1.33	0.09	6.25	0.14	1.05	0.07	1.13	0.07	15.62	0.97	0.95	0.10
A99	1.25	0.05	15.11	0.72	0.75	0.03	1.31	0.07	17.91	0.52	0.84	0.04	1.03	0.04	21.66	0.80	1.00	0.06
S100	1.45	0.04	13.29	0.32	0.93	0.03	1.35	0.04	15.76	0.53	0.80	0.02	1.05	0.02	18.78	0.61	0.66	0.03
L101	1.30	0.06	25.81	1.85	0.78	0.04	1.31	0.09	-	-	0.66	0.06	1.13	0.07	-	-	1.06	0.10
L102	1.30	0.06	20.50	1.51	0.67	0.06	1.13	0.06	-	-	-	-	1.01	0.06	11.45	1.62	-	-
D103	1.47	0.05	21.04	0.82	0.85	0.09	1.21	0.04	11.84	0.31	0.70	0.03	1.05	0.03	23.08	1.27	0.89	0.04

	STAS						STAS+GTP						STAS+GDP					
Res	R_1	δR_1	R_2	δR_2	**NOE**	**δNOE**	R_1	δR_1	R_2	δR_2	**NOE**	**δNOE**	R_1	δR_1	R_2	δR_2	**NOE**	**δNOE**
K104	1.27	0.06	12.97	0.66	0.90	0.06	1.10	0.06	14.70	0.54	0.84	0.06	0.96	0.05	18.74	0.86	0.65	0.07
I105	1.27	0.06	14.65	0.70	0.70	0.03	1.19	0.08	14.86	0.44	0.95	0.06	1.02	0.05	15.08	0.62	0.69	0.05
G106	1.19	0.04	14.08	0.53	-	-	1.06	0.04	19.89	0.76	0.90	0.03	0.91	0.03	19.50	0.60	0.79	0.05
E107	1.38	0.06	27.17	2.12	0.77	0.04	1.22	0.07	18.83	0.66	0.83	0.03	0.99	0.05	24.87	1.05	0.69	0.06
D108	1.45	0.03	12.65	0.25	0.87	0.03	1.36	0.03	15.53	0.27	0.73	0.02	1.08	0.01	16.85	0.27	0.82	0.02
H109	1.34	0.06	14.49	0.66	0.93	0.04	1.33	0.08	13.67	0.38	0.91	0.07	1.16	0.04	16.68	0.54	0.99	0.05
I110	1.33	0.03	11.52	0.31	0.86	0.02	1.26	0.05	13.61	0.48	0.86	0.03	1.00	0.02	17.83	0.95	0.66	0.03
F111	1.34	0.05	12.48	0.52	0.88	0.03	1.22	0.07	14.50	0.53	1.13	0.05	1.00	0.04	17.50	0.61	0.98	0.06
T113	1.30	0.03	12.79	0.33	0.78	0.02	1.30	0.04	17.60	0.54	0.86	0.03	0.96	0.02	17.12	0.79	0.96	0.04
L114	1.50	0.08	18.80	1.51	0.88	0.08	1.38	0.10	12.66	0.37	0.75	0.04	1.18	0.06	19.72	0.77	0.92	0.07
T116	1.39	0.04	13.72	0.44	0.91	0.03	1.25	0.04	16.56	0.77	0.92	0.03	1.00	0.02	19.19	0.75	0.89	0.04
A117	1.41	0.03	13.38	0.36	0.78	0.02	1.46	0.05	16.24	0.90	0.84	0.03	1.07	0.03	20.35	0.86	0.93	0.04
V118	1.36	0.05	12.67	0.54	0.78	0.03	1.22	0.06	16.49	0.44	0.76	0.03	1.01	0.03	18.66	0.56	0.99	0.05
Q119	1.23	0.05	24.22	1.91	0.62	0.03	-	-	20.81	1.00	-	-	1.01	0.02	20.17	0.91	-	-
A120	1.34	0.03	13.57	0.30	0.85	0.02	1.29	0.04	16.30	0.63	0.84	0.03	1.03	0.02	18.58	0.85	1.08	0.04
F121	1.34	0.04	13.79	0.44	0.78	0.03	1.23	0.05	17.78	1.04	-	-	-	-	21.64	1.18	0.70	0.07
R122	1.37	0.04	14.54	0.41	0.85	0.02	1.32	0.05	13.88	0.55	1.04	0.04	1.07	0.02	20.76	1.17	0.72	0.03
R123	1.31	0.04	11.10	0.33	0.72	0.02	1.22	0.05	13.92	0.52	0.89	0.03	1.00	0.02	16.88	0.68	0.73	0.04
R124	1.42	0.04	12.34	0.32	0.86	0.02	1.32	0.05	16.25	0.47	0.77	0.03	1.05	0.02	19.04	0.75	0.83	0.03

Table S2: Inertia and diffusion tensors of Rv1739c STAS.

	Inertia Tensor		
	I_x	I_y	I_z
relative moments	1.000	0.91	0.77

	Diffusion Tensor : axially symmetric model	
	Actual	*Jacknife*
D_{iso}	1.74 ± 0.01	1.74 ± 0.01
$D_{\|}/D_{\perp}$	0.83 ± 0.02	0.84 ± 0.07
θ	0.71 ± 0.05	0.64 ± 0.25
φ	5.63 ± 0.06	5.65 ± 0.20

Table S3: Fast model-free ^{15}N backbone relaxation motional parameters of Rv1739c STAS at 600.13 MHz and 300 K. Residue-specific parameters of fitted model, S^2, τ_e, and R_{ex}, S^2_f, and S^2_s represent faster and slower S^2, respectively, that have accounted for residue-fit by the indicated model. Errors in parameter estimation are shown as δparameter**.**

Res	Model	S^2	δS^2	S^2_f	δS^2_f	S^2_s	δS^2_s	τ_e (ps)	$\delta\tau_e$ (ps)	R_{ex} (s^{-1})	δR_{ex} (s^{-1})
I4	4	0.15	0.01	-	-	0.15	0.01	820.28	39.61	0.60	0.04
D5	5	0.20	0.01	0.85	0.01	0.24	0.01	1085.80	17.44	-	-
D6	5	0.26	0.01	0.78	0.01	0.33	0.01	1296.20	41.66	-	-
Y7	5	0.32	0.01	0.79	0.02	0.41	0.01	1437.2	90.05	-	-
Q9	-	-	-	-	-	-	-	-	-	-	-
A10	5	0.38	0.03	0.73	0.03	0.53	0.04	2267.9	287.18	-	-
K11	1	0.93	0.02			0.93	0.02			-	-
R12	5	0.57	0.04	0.83	0.03	0.69	0.04	1879.0	1270.0	-	-
V13	4	0.86	0.04	-	-	0.86	0.04	135.75	140.12	2.40	0.84
G15	2	0.86	0.02	-	-	0.86	0.02	77.47	29.51	-	-
L16	1	0.97	0.02	-	-	0.97	0.02	-	-	-	-
V17	1	0.92	0.03	-	-	0.92	0.03	-	-	-	-
V18	1	0.91	0.03	-	-	0.91	0.03	-	-	-	-
Y19	-	-	-	-	-	-	-	-	-	-	-
D22	4	0.89	0.03	-	-	0.89	0.03	143.54	195.12	2.56	1.06
A23	2	0.78	0.01	-	-	0.78	0.01	31.67	5.87	-	-
L25	1	1.00	0.02	-	-	1.00	0.02	-	-	-	-
A28	1	0.92	0.03	-	-	0.92	0.03	-	-	-	-
N29	1	1.00	0.02	-	-	1.00	0.02	-	-	-	-
A30	1	0.94	0.04	-	-	0.94	0.04	-	-	-	-
E31	1	0.98	0.01	-	-	0.97	0.02	-	-	-	-
D32	1	0.92	0.02	-	-	0.92	0.02	-	-	-	-
F33	1	0.92	0.02	-	-	0.92	0.02	-	-	-	-
R34	1	0.84	0.02	-	-	0.84	0.02	-	-	-	-
R35	-	-	-	-	-	-	-	-	-	-	-
R36	1	0.96	0.02	-	-	0.96	0.02	-	-	-	-
A37	3	0.89	0.03	-	-	0.89	0.03	-	-	2.64	0.80
L38	2	0.85	0.02	-	-	0.85	0.02	58.90	18.12	-	-
T39	1	0.89	0.01	-	-	0.89	0.01	-	-	-	-
V40	1	0.94	0.02	-	-	0.94	0.02	-	-	-	-
V41	4	0.82	0.03	-	-	0.82	0.03	40.46	9.72	1.86	0.57
D42	1	0.90	0.01	-	-	0.90	0.01	-	-	-	-
Q43	2	0.85	0.01	-	-	0.85	0.01	54.72	8.66	-	-
D44	4	0.84	0.01	-	-	0.84	0.01	45.18	7.02	1.60	0.35
G46	-	-	-	-	-	-	-	-	-	-	-
V48	1	0.84	0.02	-	-	0.84	0.02	-	-	-	-
E49	1	0.90	0.03	-	-	0.90	0.03	-	-	-	-
W50	-	-	-	-	-	-	-	-	-	-	-
F51	-	-	-	-	-	-	-	-	-	-	-
V52	1	0.89	0.03	-	-	0.89	0.03	-		-	-
L53	1	0.94	0.03	-	-	0.94	0.03	-	-	-	-
N54	2	0.94	0.02	-	-	0.94	0.03	76.22	230.84	-	-
A55	2	0.89	0.02	-	-	0.90	0.03	78.95	97.0	-	-
E56	3	0.93	0.02	-	-	0.93	0.02	-	-	1.51	0.55
S57	4	0.80	0.04	-	-	0.80	0.04	41.28	13.55	12.97	1.77
V59	1	1.00	0.02	-	-	1.00	0.03	-	-	-	-
E60	5	0.46	0.03	0.82	0.03	0.56	0.03	1435.1	116.94	-	-

Res	Model	S^2	δS^2	S^2_f	δS^2_f	S^2_s	δS^2_s	τ_e (ps)	$\delta\tau_e$ (ps)	R_{ex} (s^{-1})	δR_{ex} (s^{-1})
V61	2	0.93	0.03	-	-	0.93	0.03	248.50	336.40	-	-
D62	2	0.91	0.03	-	-	0.91	0.03	590.09	341.81	-	-
T64	3	0.83	0.03	-	-	0.83	0.03	-	-	13.83	2.17
A65	1	1.00	0.02	-	-	1.00	0.02	-	-	-	-
L66	3	0.89	0.04	-	-	0.89	0.04	-	-	2.75	1.02
D67	5	0.73	0.02	0.84	0.01	0.87	0.02	2015.9	717.34	-	-
A68	1	0.94	0.02	-	-	0.94	0.02	-	-	-	-
L69	1	0.92	0.02	-	-	0.92	0.02			-	-
D70	2	0.88	0.02	-	-	0.88	0.02	43.94	27.37	-	-
Q71	1	0.93	0.02	-	-	0.93	0.02	-	-	-	-
L72	1	0.95	0.03	-	-	0.95	0.03	-	-	-	-
R73	1	0.97	0.02	-	-	0.97	0.02	-	-	-	-
T74	1	0.97	0.02	-	-	0.97	0.02	-	-	-	-
L76	1	1.00	0.01	-	-	1.00	0.01	-	-	-	-
L77	1	0.91	0.02	-	-	0.91	0.02	-	-	-	-
R78	-	-	-	-	-	-	-	-	-	-	-
R79	1	0.93	0.02	-	-	0.93	0.02	-	-	-	-
G80	-	-	-	-	-	-	-	-	-	-	-
I81	1	0.88	0.02	-	-	0.88	0.02	-	-	-	-
V82	1	0.86	0.03	-	-	0.86	0.03	-	-	-	-
F83	1	0.88	0.02	-	-	0.88	0.02	-	-	-	-
A84	1	0.91	0.02	-	-	0.91	0.02	-	-	-	-
M85	1	0.86	0.02	-	-	0.86	0.02	-	-	-	-
A86	-	-	-	-	-	-	-	-	-	-	-
V88	3	0.83	0.04	-	-	0.83	0.04	-	-	5.23	1.15
K89	1	1.00	0.03	-	-	1.00	0.03	-	-	-	-
D91	1	1.00	0.01	-	-	1.00	0.01	-	-	-	-
L92	4	0.91	0.03	-	-	0.91	0.03	135.11	265.61	4.80	1.25
E94	1	0.98	0.03	-	-	0.98	0.03	-	-	-	-
L96	1	0.97	0.03	-	-	0.97	0.03	-	-	-	-
A98	1	1.00	0.02	-	-	1.00	0.02	-	-	-	-
A99	1	0.93	0.03	-	-	0.93	0.03	-	-	-	-
S100	-	-	-	-	-	-	-	-	-	-	-
K104	1	0.89	0.03	-	-	0.89	0.03	-	-	-	
I105	4	0.86	0.04	-	-	0.86	0.04	49.37	37.99	2.03	0.85
G106	1	0.88	0.02	-	-	0.88	0.02	-	-	-	-
D108	1	0.94	0.01	-	-	0.94	0.01	-	-	-	-
H109	1	0.96	0.03	-	-	0.96	0.03	-	-	-	-
I110	1	0.86	0.02	-	-	0.86	0.02	-	-	-	-
F111	1	0.89	0.03	-	-	0.89	0.03	-	-	-	-
T113	1	0.89	0.02	-	-	0.89	0.02	-	-	-	-
L114	1	1.00	0.03	-	-	1.00	0.03	-	-	-	-
T116	1	0.96	0.02	-	-	0.96	0.02	-	-	-	-
A117	1	0.95	0.02	-	-	0.95	0.02	-	-	-	-
V118	1	0.91	0.03	-	-	0.91	0.03	-	-	-	-
A120	1	0.93	0.01	-	-	0.94	0.02	-	-	-	-
F121	1	0.94	0.02	-	-	0.94	0.02	-	-	-	-
R122	1	0.97	0.02	-	-	0.97	0.02	-	-	-	-
R123	5	0.77	0.03	0.85	0.02	0.91	0.02	1170.7	331.27	-	-
R124	-	-	-	-	-	-	-	-	-	-	-

Figure S3: Rv1739c STAS residues showing chemical shift perturbation (CSP) upon binding of GTP (A) or GDP (B) are mapped onto the average STAS structure. Red residues show increased R_2 and $J(0)$ and decreased NOE and $J(\omega_N)$ values; yellow residues deviated from the red pattern in one or two relaxation parameters; blue residues are those lacking at least two relaxation parameters due to experimental limitations.

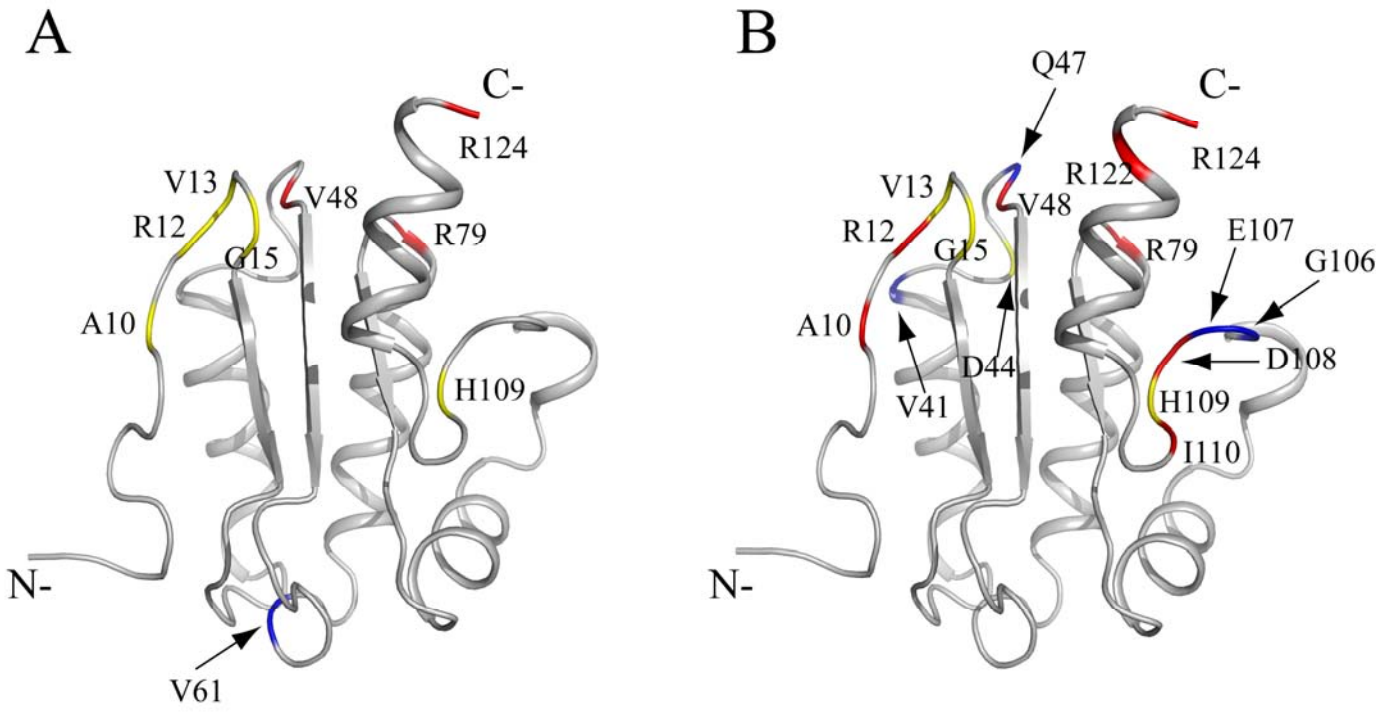

Figure S4: Reduced spectral density correlation scatter plots of Rv1739c STAS. Values of $J(\omega_N)$ plotted as a function of $J(0)$ for residues of (A) STAS; (B) STAS +GTP; (C) STAS+GDP; Values of $J(0.87\omega_H)$ plotted as a function of $J(0)$ for residues of (D) STAS; (E) STAS+GTP; (F) STAS+GDP. (D-F), blue residues with $J(0) < 2/5\tau_m$ and $J(0.87\omega_H) > 7.5$ ps/rad; cyan residues with $J(0) < 2/5\tau_m$ and $J(0.87\omega_H) < 7.5$ ps/rad; red residues with $J(0) > J(0)_{cutoff}$ are labeled with residue number. Open circles in A-C and blue or cyan residues in D-F comprised the majority of N-terminal loop L1 residues, and fit to a different linear correlation than did most core region residues. This color scheme is shared with that of Fig. 7. $J(0)_{cutoff} = J(0)$ + one RMSD.

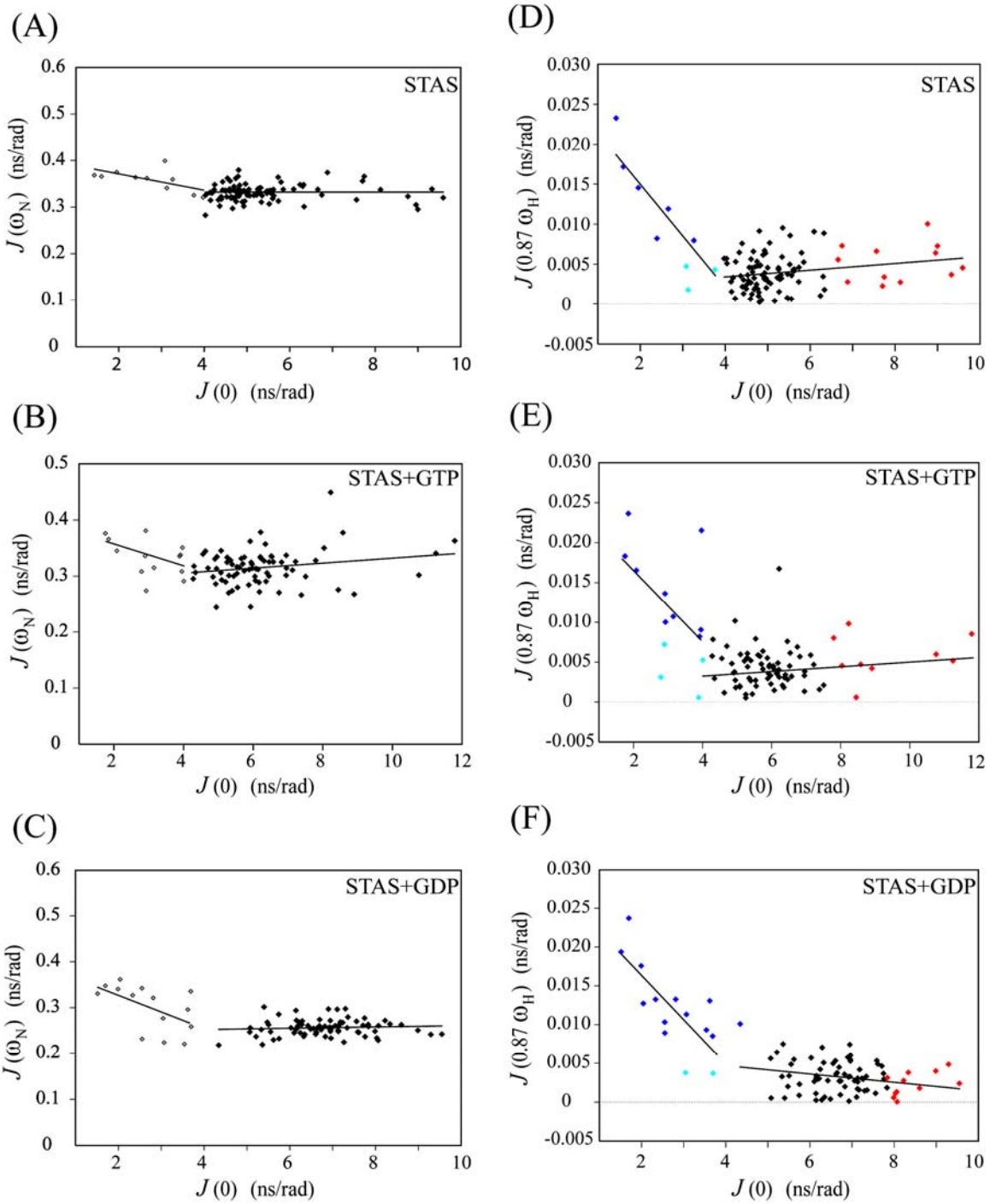

Table S4: ^{15}N backbone reduced spectral density function parameters derived from measured ^{15}N relaxation data at 600.13 MHz and 300K. Residue-specific reduced spectral density parameters, $J(0)$ (ns/rad), $J(\omega_N)$ (ns/rad), and $J(0.87\omega_H)$ (ps/rad) of Rv1739c STAS in free-state and in complex with saturated concentrations of GTP and GDP are shown. Errors in parameter estimation are shown as δJ.

	STAS						STAS+GTP						STAS+GDP					
Res	$J(0)$	$\delta J(0)$	$J(\omega_N)$	$\delta J(\omega_N)$	$J(0.87\omega_H)$	$\delta J(0.87\omega_H)$	$J(0)$	$\delta J(0)$	$J(\omega_N)$	$\delta J(\omega_N)$	$J(0.87\omega_H)$	$\delta J(0.87\omega_H)$	$J(0)$	$\delta J(0)$	$J(\omega_N)$	$\delta J(\omega_N)$	$J(0.87\omega_H)$	$\delta J(0.87\omega_H)$
D3	-	-	-	-	-	-	-	-	-	-	-	-	2.55	0.07	0.34	0.02	10.32	2.21
I4	-	-	-	-	-	-	-	-	-	-	-	-	1.51	0.01	0.33	0.01	19.38	0.35
D5	1.43	0.02	0.37	0.01	23.28	0.40	1.85	0.01	0.37	0.01	23.65	0.41	1.70	0.01	0.35	0.01	23.72	0.67
D6	1.60	0.03	0.37	0.01	17.16	0.59	1.76	0	0.38	0.01	18.32	0.43	2.04	0.01	0.36	0.01	12.73	0.62
Y7	1.95	0.04	0.37	0.01	14.54	0.86	2.08	0.01	0.35	0.01	16.53	0.50	2.33	0.02	0.33	0.01	13.26	0.53
Q9	3.08	0.07	0.4	0.01	4.73	0.63	2.79	0.03	0.31	0.01	3.12	0.73	3.07	0.03	0.22	0.01	11.32	0.31
A10	2.39	0.15	0.36	0.02	8.21	0.70	2.91	0.01	0.38	0.01	13.62	0.56	2.81	0.02	0.32	0.01	13.26	0.54
K11	4.70	0.12	0.34	0.01	4.66	0.44	4.85	0.04	0.30	0.01	4.82	0.45	6.91	0.17	0.26	0.01	3.21	0.47
R12	3.26	0.11	0.36	0.01	7.96	1.55	3.15	0.02	0.32	0.01	10.73	0.55	3.62	0.05	0.30	0.01	13.07	0.64
V13	5.35	0.28	0.32	0.02	9.53	1.25	3.95	0.10	0.31	0.01	9.05	0.77	6.70	0.23	0.27	0.01	2.70	1.17
G15	4.40	0.13	0.32	0.01	7.58	0.60	5.10	0.08	0.29	0.01	5.96	0.53	6.10	0.14	0.25	0.01	2.64	0.6
L16	5.25	0.23	0.34	0.01	4.55	0.62	6.21	0.11	0.33	0.01	4.04	0.84	5.51	0.16	0.26	0.01	3.38	0.7
V17	4.80	0.26	0.34	0.02	0.24	1.08	5.89	0.17	0.31	0.01	2.95	0.90	6.82	0.29	0.26	0.01	3.58	0.89
V18	4.76	0.23	0.32	0.01	4.79	0.63	3.89	0.12	0.34	0.01	0.57	1.13	5.07	0.19	0.25	0.01	5.61	0.73
Y19	4.23	0.17	0.34	0.01	0.69	0.65	-	-	-	-	-	-	6.64	0.23	0.26	0.01	3.76	0.75
R20	3.13	0.16	0.34	0.01	1.78	0.84	5.08	0.07	0.35	0.01	1.9	0.78	6.55	0.20	0.25	0.01	4.97	0.72
Y21	7.71	0.54	0.36	0.02	2.26	1.26	10.76	0.83	0.30	0.02	5.98	1.18	9.55	1.18	0.24	0.01	2.39	1.45
D22	5.53	0.38	0.33	0.02	8.58	0.61	8.04	0.39	0.35	0.01	4.56	1.02	7.36	0.42	0.28	0.02	1.54	1.14
A23	4.03	0.11	0.28	0.01	5.70	0.49	4.94	0.06	0.24	0.01	10.17	0.43	5.36	0.11	0.22	0.01	7.49	0.51
L25	5.85	0.31	0.34	0.02	5.26	0.68	-	-	-	-	-	-	8.34	0.93	0.26	0.01	3.80	1.04
C28	4.25	0.29	0.35	0.02	5.31	1.12	-	-	-	-	-	-	-	-	-	-	-	-
N29	6.30	0.44	0.34	0.02	3.46	0.78	8.90	0.24	0.27	0.01	4.22	0.76	8.22	0.49	0.27	0.02	2.75	1.09
A30	5.48	0.40	0.33	0.02	0.70	1.42	8.45	0.67	0.28	0.02	0.6	1.43	-	-	-	-	-	-
E31	5.32	0.14	0.34	0.01	3.23	0.50	6.37	0.06	0.29	0.01	3.06	0.45	7.76	0.35	0.24	0.01	2.95	0.49
D32	4.81	0.13	0.32	0.01	4.82	0.73	5.55	0.06	0.28	0.01	2.01	0.46	6.73	0.37	0.25	0.01	2.70	0.57
F33	5.01	0.21	0.33	0.01	2.83	0.52	7.51	0.14	0.30	0.01	2.12	0.77	7.34	0.32	0.26	0.01	3.29	0.66
R34	4.15	0.13	0.31	0.01	1.56	0.45	2.93	0.04	0.27	0.01	10.03	0.45	2.55	0.03	0.23	0.01	8.92	0.41
R35	5.56	0.19	0.33	0.01	0.64	0.56	7.22	0.10	0.33	0.01	4.68	0.53	7.83	0.40	0.26	0.01	1.84	0.73
R36	5.26	0.17	0.33	0.01	4.34	0.56	5.75	0.07	0.31	0.01	6.38	0.58	7.61	0.36	0.25	0.01	4.89	0.56

	STAS						STAS+GTP						STAS+GDP					
Res	$J(0)$	$\delta J(0)$	$J(\omega_N)$	$\delta J(\omega_N)$	$J(0.87\omega_H)$	$\delta J(0.87\omega_H)$	$J(0)$	$\delta J(0)$	$J(\omega_N)$	$\delta J(\omega_N)$	$J(0.87\omega_H)$	$\delta J(0.87\omega_H)$	$J(0)$	$\delta J(0)$	$J(\omega_N)$	$\delta J(\omega_N)$	$J(0.87\omega_H)$	$\delta J(0.87\omega_H)$
A37	5.60	0.24	0.32	0.01	4.32	0.68	6.75	0.17	0.27	0.01	6.90	0.57	3.54	0.07	0.22	0.01	9.31	0.43
L38	4.66	0.21	0.30	0.01	6.59	0.56	5.93	0.20	0.24	0.01	4.42	0.84	6.62	0.30	0.25	0.01	3.59	0.95
T39	4.68	0.11	0.32	0.01	3.28	0.38	6.06	0.07	0.29	0.01	4.16	0.42	6.83	0.29	0.24	0.01	1.98	0.46
V40	4.93	0.15	0.33	0.01	3.91	0.52	6.14	0.09	0.31	0.01	3.58	0.71	7.59	0.43	0.25	0.01	5.33	0.54
V41	4.93	0.18	0.30	0.01	6.70	0.47	6.18	0.11	0.27	0.01	4.88	0.54	-	-	-	-	-	-
D42	4.64	0.12	0.32	0.01	4.04	0.39	6.40	0.06	0.31	0.01	3.42	0.49	6.95	0.35	0.25	0.01	3.28	0.55
Q43	4.33	0.09	0.32	0.01	6.46	0.38	5.21	0.04	0.29	0.01	5.15	0.44	6.14	0.23	0.25	0.01	1.10	0.46
D44	4.89	0.11	0.31	0.01	6.15	0.37	5.54	0.04	0.30	0.01	7.93	0.42	6.15	0.20	0.25	0.01	3.05	0.45
G46	3.76	0.06	0.33	0.01	4.32	0.45	4.30	0.03	0.32	0.01	7.85	0.41	5.21	0. 14	0.24	0.01	6.40	0.42
Q47	-	-	-	-	-	-	3.97	0.02	0.35	0.01	21.54	0.46	4.34	0.09	0.22	0.01	10.1	0.42
V48	4.36	0.17	0.30	0.01	3.52	0.65	5.30	0.14	0.27	0.01	6.08	0.67	5.62	0.14	0.23	0.01	5.49	0.62
V49	4.59	0.25	0.34	0.01	0.63	0.69	4.34	0.15	0.31	0.01	2.96	0.84	6.42	0.27	0.26	0.01	2.75	0.88
W50	5.46	0.17	0.33	0.01	0.77	0.53	6.31	0.10	0.33	0.01	2.10	0.64	-	-	-	-	-	-
F51	5.16	0.23	0.33	0.01	0.39	0.61	5.25	0.14	0.33	0.01	0.96	0.88	7.17	0.25	0.26	0.01	1.57	0.91
V52	4.49	0.20	0.34	0.01	1.92	0.70	-	-	-	-	-	-	6.03	0.21	0.26	0.01	5.69	0.69
L53	5.23	0.28	0.33	0.02	3.32	0.69	-	-	-	-	-	-	6.18	0.29	0.26	0.01	2.96	0.98
N54	4.61	0.19	0.36	0.01	5.63	0.54	-	-	-	-	-	-	7.23	0.26	0.27	0.01	3.04	0.81
A55	4.95	0.23	0.31	0.01	6.38	0.56	5.98	0.20	0.31	0.01	2.26	0.88	-	-	-	0	-	0
E56	5.47	0.16	0.33	0.01	3.77	0.44	6.53	0.08	0.33	0.01	6.15	0.59	6.95	0.21	0.27	0.01	7.43	0.63
S57	8.96	0.63	0.30	0.01	6.41	0.47	8.58	0.37	0.38	0.01	4.71	0.97	6.90	0.49	0.3	0.02	5.76	1.06
V59	5.80	0.45	0.35	0.02	6.42	1.34	6.17	0.10	0.29	0.01	3.62	0.68	6.29	0.15	0.27	0.01	7.05	0.67
E60	2.66	0.14	0.36	0.01	11.9	0.83	2.90	0.04	0.34	0.01	7.21	0.82	1.99	0.06	0.34	0.02	17.58	0.54
V61	5.04	0.42	0.34	0.02	7.67	0.73	-	-	-	-	-	-	-	-	-	-	-	-
D62	4.80	0.21	0.38	0.02	9.14	0.95	-	-	-	-	-	-	-	-	-	-	-	-
T64	-	-	-	-	-	-	-	-	-	-	-	-	8.03	0.27	0.23	0.01	1.14	0.73
A65	6.24	0.50	0.35	0.01	1.03	0.87	4.01	0.04	0.29	0.01	5.26	0.72	-	-	-	-	-	-
L66	5.74	0.34	0.31	0.01	4.60	0.90	6.46	0.34	0.30	0.01	7.60	0.73	-	-	-	-	-	-
D67	4.04	0.09	0.33	0.01	5.09	0.42	5.70	0.13	0.32	0.01	4.76	0.44	7.75	0.28	0.28	0.01	3.67	1.34
A68	4.96	0.12	0.33	0.01	3.25	0.45	6.22	0.04	0.33	0.01	3.12	0.54	6.69	0.34	0.26	0.01	4.47	0.51
L69	4.79	0.19	0.34	0.01	1.01	0.69	4.93	0.05	0.29	0.01	3.77	0.63	-	-	-	-	-	-
D70	4.75	0.18	0.31	0.01	5.34	0.54	3.91	0.05	0.34	0.01	8.21	1.29	3.70	0.09	0.26	0.01	3.69	0.39
Q71	4.88	0.17	0.33	0.01	3.63	0.57	6.82	0.07	0.32	0.01	5.7	0.55	8.99	0.67	0.25	0.01	4	0.69
L72	4.74	0.28	0.36	0.02	2.48	0.87	-	-	-	-	-	-	6.16	0.36	0.27	0.01	3.36	1.15
R73	5.31	0.16	0.33	0.01	3.66	0.62	7.13	0.12	0.31	0.01	5.88	0.61	-	-	-	-	-	-

	STAS						STAS+GTP						STAS+GDP					
Res	$J(0)$	$\delta J(0)$	$J(\omega_N)$	$\delta J(\omega_N)$	$J(0.87\omega_H)$	$\delta J(0.87\omega_H)$	$J(0)$	$\delta J(0)$	$J(\omega_N)$	$\delta J(\omega_N)$	$J(0.87\omega_H)$	$\delta J(0.87\omega_H)$	$J(0)$	$\delta J(0)$	$J(\omega_N)$	$\delta J(\omega_N)$	$J(0.87\omega_H)$	$\delta J(0.87\omega_H)$
T74	5.63	0.17	0.32	0.01	4.37	0.47	6.96	0.13	0.31	0.01	3.83	0.6	7.99	0.42	0.25	0.01	0.58	0.65
E75	8.12	0.60	0.34	0.01	2.73	0.48	5.61	0.09	0.32	0.01	5.88	0.47	7.14	0.30	0.26	0.01	2.59	0.63
L76	6.33	0.42	0.35	0.01	8.86	1.45	6.22	0.04	0.38	0.01	16.74	0.44	-	-	-	-	-	-
L77	4.76	0.16	0.33	0.01	1.91	0.43	5.25	0.08	0.32	0.01	0.53	0.77	5.48	0.16	0.27	0.01	2	0.67
R78	4.69	0.12	0.34	0.01	1.85	0.45	5.29	0.07	0.33	0.01	5.57	0.55	7.84	0.40	0.26	0.01	3.12	0.51
R79	5.06	0.15	0.32	0.01	2.60	0.47	5.54	0.06	0.32	0.01	2.71	0.58	7.13	0.35	0.25	0.01	3.06	0.62
G80	4.43	0.10	0.34	0.01	1.31	0.49	5.39	0.09	0.32	0.01	5.19	0.56	6.72	0.31	0.25	0.01	0.94	0.50
I81	4.63	0.17	0.32	0.01	1.25	0.59	4.63	0.08	0.34	0.01	1.17	0.81	5.33	0.20	0.25	0.01	3.28	0.92
V82	4.40	0.21	0.32	0.01	2.18	0.61	6.95	0.25	0.34	0.01	1.34	0.90	5.75	0.24	0.23	0.01	2.30	0.87
F83	4.53	0.18	0.32	0.01	3.64	0.52	5.35	0.09	0.33	0.01	3.00	0.69	5.08	0.17	0.26	0.01	0.52	0.73
A84	4.60	0.13	0.33	0.01	2.69	0.62	4.90	0.08	0.33	0.01	3.68	0.65	6.28	0.15	0.26	0.01	0.28	0.62
M85	4.18	0.17	0.33	0.01	3.31	0.80	4.70	0.13	0.31	0.01	7.00	0.70	6.33	0.23	0.24	0.01	5.06	0.76
A86	4.86	0.14	0.33	0.01	0.50	0.61	5.88	0.12	0.28	0.01	5.51	0.64	6.96	0.20	0.26	0.01	6	0.78
R87	8.76	0.69	0.32	0.01	10.03	0.91	-	-	-	-	-	-	-	-	-	-	-	-
V88	6.34	0.41	0.30	0.01	1.80	0.85	5.30	0.12	0.30	0.01	4.42	0.69	8.06	0.46	0.23	0.01	1.31	1.19
K89	6.09	0.46	0.34	0.03	9.06	1.55	8.23	1.06	0.45	0.04	9.82	2.38	-	-	-	-	-	-
D91	5.73	0.17	0.36	0.01	2.78	0.81	6.52	0.05	0.34	0.01	4.52	0.49	7.18	0.15	0.27	0.01	4.18	0.50
L92	6.75	0.42	0.33	0.02	7.30	0.72	7.80	0.19	0.33	0.01	8.03	0.92	-	-	-	-	-	-
R93	-	-	-	-	-	-	11.79	0.79	0.36	0.03	8.53	1.57	3.04	0.20	0.28	0.02	3.77	1.65
E94	5.62	0.40	0.34	0.02	4.14	0.82	6.35	0.18	0.36	0.01	1.83	0.97	7.11	0.29	0.30	0.01	0.64	1.08
L96	5.56	0.41	0.33	0.02	3.60	1.35	11.25	0.35	0.34	0.02	5.16	1.15	3.69	0.06	0.34	0.02	8.51	1.02
R97	9.33	0.61	0.34	0.01	3.68	1.43	-	-	-	-	-	-	5.40	0.44	0.30	0.02	0.52	1.20
A98	6.66	0.46	0.34	0.02	5.57	1.23	-	-	-	-	-	-	5.74	0.37	0.29	0.02	0.87	1.74
A99	5.52	0.28	0.31	0.01	4.97	0.53	6.58	0.14	0.33	0.01	3.21	0.73	8.07	0.30	0.26	0.01	0.05	0.88
S100	4.79	0.13	0.37	0.01	1.47	0.56	5.75	0.08	0.33	0.01	4.13	0.49	6.96	0.23	0.25	0.01	5.47	0.53
L101	9.59	0.70	0.32	0.01	4.55	0.86	-	-	-	-	-	-	-	-	-	-	-	-
L102	7.56	0.58	0.32	0.02	6.62	1.28	-	-	-	-	-	-	-	-	-	-	-	-
D103	7.74	0.30	0.37	0.01	3.39	2.06	4.28	0.03	0.30	0.01	5.75	0.54	8.6	0.52	0.26	0.01	1.80	0.61
K104	4.70	0.24	0.32	0.02	2.01	1.08	5.4	0.15	0.27	0.01	2.68	1.05	6.96	0.34	0.23	0.01	5.26	1.06
I105	5.34	0.27	0.31	0.01	5.91	0.58	5.44	0.12	0.30	0.01	1.00	1.03	5.55	0.23	0.25	0.01	4.86	0.83
G106	-	-	-	-	-	-	7.38	0.21	0.27	0.01	1.58	0.46	7.26	0.24	0.22	0.01	2.93	0.70
E107	-	-	-	-	-	-	6.95	0.20	0.30	0.01	3.31	0.62	9.29	0.39	0.24	0.01	4.85	0.97
D108	4.54	0.1	0.36	0.01	2.93	0.59	5.66	0.05	0.33	0.01	5.74	0.41	6.22	0.10	0.27	0.01	3.03	0.42

	STAS						STAS+GTP						STAS+GDP					
Res	$J(0)$	$\delta J(0)$	$J(\omega_N)$	$\delta J(\omega_N)$	$J(0.87\omega_H)$	$\delta J(0.87\omega_H)$	$J(0)$	$\delta J(0)$	$J(\omega_N)$	$\delta J(\omega_N)$	$J(0.87\omega_H)$	$\delta J(0.87\omega_H)$	$J(0)$	$\delta J(0)$	$J(\omega_N)$	$\delta J(\omega_N)$	$J(0.87\omega_H)$	$\delta J(0.87\omega_H)$
H109	5.27	0.26	0.34	0.02	1.54	0.72	4.96	0.11	0.33	0.01	1.81	1.56	6.14	0.20	0.29	0.01	0.24	0.81
I110	4.14	0.12	0.33	0.01	2.80	0.51	4.95	0.05	0.31	0.01	2.73	0.67	6.60	0.34	0.24	0.01	5.30	0.51
F111	4.50	0.20	0.33	0.01	2.42	0.68	-	-	-	-	-	-	6.49	0.25	0.25	0.01	0.39	0.90
T113	4.63	0.12	0.32	0.01	4.55	0.48	6.46	0.05	0.33	0.01	2.83	0.54	6.35	0.31	0.24	0.01	0.64	0.53
L114	6.88	0.58	0.37	0.02	2.78	1.94	4.56	0.11	0.34	0.01	5.46	0.97	7.30	0.31	0.30	0.02	1.45	1.26
T116	4.97	0.16	0.35	0.01	2.04	0.61	6.08	0.08	0.31	0.01	1.47	0.52	7.13	0.28	0.25	0.01	1.69	0.57
A117	4.83	0.14	0.35	0.01	4.86	0.50	5.91	0.09	0.36	0.01	3.55	0.65	7.56	0.33	0.27	0.01	1.13	0.67
V118	4.57	0.21	0.34	0.01	4.59	0.62	6.05	0.12	0.30	0.01	4.51	0.6	6.93	0.22	0.26	0.01	0.12	0.79
Q119	9	0.75	0.29	0.01	7.27	0.48	-	-	-	-	-	-	-	-	-	-	-	-
A120	4.92	0.11	0.33	0.01	3.17	0.43	5.97	0.07	0.32	0.01	3.33	0.52	-	-	-	-	-	-
F121	5	0.18	0.33	0.01	4.56	0.53	-	-	-	-	-	-	-	-	-	-	-	-
R122	5.28	0.16	0.34	0.01	3.12	0.46	-	-	-	-	-	-	7.71	0.44	0.26	0.01	4.62	0.51
R123	3.97	0.12	0.32	0.01	5.71	0.46	5.07	0.08	0.31	0.01	2.02	0.60	6.24	0.26	0.25	0.01	4.20	0.61
R124	4.43	0.12	0.35	0.01	3.04	0.53	5.94	0.06	0.32	0.01	4.64	0.61	7.06	0.29	0.26	0.01	2.72	0.56

Table S5: ^{15}N relaxation rates R_1 (sec^{-1}), R_2 (sec^{-1}), $\{^1H\}$-^{15}N heteronuclear NOEs recorded at 600.13 MHz, 300 K, generalized order parameters (S^2), and estimated reduced spectral density function parameters {$J(0)$ (ns/rad), $J(\omega_N)$ (ns/rad), and $J(0.87\omega_H)$ (ps/rad)} of each secondary-structured segment of Rv1739c STAS. Symbols α, β, and L represent helix, strand and loop structures followed by their number in sequence from N-terminus.

structural segment	residue range	R_1	R_2	*NOE*	S^2	$J(0)$	$J(\omega_N)$	$J(0.87\omega_H)$
L1	1-15	1.52 ± 0.05	8.06 ± 0.24	0.55 ± 0.03	0.50 ± 0.02	3.13 ± 0.11	0.36 ± 0.01	10.85 ± 0.78
β1	16-20	1.34 ± 0.05	12.31 ± 0.55	0.89 ± 0.04	0.93 ± 0.03	4.44 ± 0.21	0.34 ± 0.01	2.41 ± 0.76
L2	21-29	1.37 ± 0.06	17.97 ± 1.27	0.76 ±0.05	0.92 ± 0.03	5.61 ± 0.34	0.33 ± 0.02	5.09 ± 0.83
α1	30-42	1.30 ± 0.04	13.77 ± 0.47	0.82 ± 0.29	0.90 ± 0.02	5.00 ± 0.18	0.32 ± 0.01	3.61 ± 0.60
L3	43-49	1.29 ± 0.03	11.00 ± 0.31	0.79 ± 0.03	0.86 ± 0.02	4.39 ± 0.14	0.32 ± 0.01	4.22 ± 0.51
β2	50-54	1.34 ± 0.05	13.76 ± 0.56	0.89 ± 0.03	0.92 ± 0.03	4.99 ± 0.21	0.34 ± 0.01	2.41 ± 0.61
L4	55-64	1.38 ± 0.06	18.77 ± 1.20	0.70 ± 0.04	0.85 ± 0.03	5.38 ± 0.32	0.34 ± 0.02	7.38 ± 0.76
α2	65-77	1.34 ± 0.04	14.85 ± 0.68	0.82 ± 0.03	0.92 ± 0.02	5.41 ± 0.26	0.33 ± 0.01	3.69 ± 0.67
L5	78-80	1.32 ± 0.03	13.06 ± 0.33	0.91 ± 0.02	0.93 ± 0.02	4.73 ± 0.12	0.33 ± 0.01	1.92 ± 0.47
β3	81-86	1.30 ± 0.04	12.55 ± 0.45	0.89 ± 0.03	0.88 ± 0.02	4.53 ± 0.17	0.33 ± 0.01	2.26 ± 0.63
L6	87-90	1.32 ± 0.07	19.21 ± 1.37	0.67 ± 0.05	0.92 ± 0.03	7.06 ± 0.52	0.32 ± 0.02	6.97 ± 1.10
α3	91-99	1.35 ± 0.06	18.98 ± 1.15	0.82 ± 0.05	0.97 ± 0.03	6.45 ± 0.39	0.34 ± 0.02	4.58 ± 0.99
L7	100-101	1.38 ± 0.05	19.55 ± 1.09	0.86 ± 0.03	-	7.19 ± 0.41	0.34 ± 0.01	3.01 ± 0.71
α4	102-105	1.33 ± 0.06	17.29 ± 0.92	0.78 ± 0.06	0.88 ± 0.03	6.34 ± 0.35	0.33 ± 0.02	3.59 ± 1.00
L8	106-109	1.34 ± 0.05	17.10 ± 0.89	0.85 ± 0.04	0.93 ± 0.02	4.91 ± 0.18	0.35 ± 0.01	2.24 ± 0.66
β4	110-111	1.33 ± 0.04	11.99 ± 0.42	0.87 ± 0.03	0.88 ± 0.02	4.32 ± 0.16	0.33 ± 0.01	2.61 ± 0.60
L9	112-113	1.30 ± 0.03	12.79 ± 0.34	0.78 ± 0.02	0.89 ± 0.02	4.63 ± 0.13	0.32 ± 0.01	4.55 ± 0.48
α5	114-121	1.37 ± 0.05	15.74 ± 0.79	0.80 ± 0.03	0.95 ± 0.02	5.74 ± 0.31	0.34 ± 0.01	4.18 ± 0.73
L10	122-124	1.37 ± 0.04	12.66 ± 0.35	0.81 ± 0.02	0.87 ± 0.02	4.56 ± 0.14	0.34 ± 0.01	3.96 ± 0.48

Table S6: ^{15}N relaxation rates R_1 (sec^{-1}), R_2 (sec^{-1}), {^1H}-^{15}N heteronuclear NOEs recorded at 600.13 MHz, 300 K, and reduced spectral density function parameters {$J(0)$ (ns/rad), $J(\omega_N)$ (ns/rad), and $J(0.87\omega_H)$ (ps/rad)} of each secondary-structured segment of Rv1739c STAS in the presence of 20 mM GTP.

structural segment	residue range	R_1	R_2	*NOE*	$J(0)$	$J(\omega_N)$	$J(0.87\omega_H)$
L1	1-15	1.41 ± 0.04	8.35 ± 0.12	0.49 ± 0.03	3.16 ± 0.03	0.33 ± 0.01	11.76 ± 0.55
β1	16-20	1.32 ± 0.06	14.81 ± 0.45	0.91 ± 0.04	5.27 ± 0.12	0.33 ± 0.01	2.36 ± 0.91
L2	21-29	1.11 ± 0.05	19.09 ± 0.96	0.79 ± 0.06	8.16 ± 0.38	0.29 ± 0.01	6.23 ± 0.85
α1	30-42	1.17 ± 0.04	16.98 ± 0.80	0.76 ± 0.03	6.25 ± 0.14	0.29 ± 0.01	4.33 ± 0.63
L3	43-49	1.28 ± 0.04	13.19 ± 0.38	0.59 ± 0.03	4.78 ± 0.07	0.31 ± 0.01	8.58 ± 0.54
β2	50-54	1.30 ± 0.06	14.16 ± 0.41	1.02 ± 0.04	5.78 ± 0.12	0.33 ± 0.01	1.53 ± 0.76
L4	55-64	1.35 ± 0.06	16.96 ± 0.55	0.75 ± 0.04	6.03 ± 0.16	0.33 ± 0.01	4.79 ± 0.79
α2	65-77	1.33 ± 0.05	16.15 ± 0.64	0.76 ± 0.04	5.77 ± 0.98	0.32 ± 0.01	5.94 ± 0.65
L5	78-80	1.31 ± 0.04	14.85 ± 0.52	0.78 ± 0.03	5.41 ± 0.07	0.32 ± 0.01	4.49 ± 0.56
β3	81-86	1.30 ± 0.06	14.82 ± 0.44	0.82 ± 0.04	5.40 ± 0.13	0.32 ± 0.01	3.62 ± 0.73
L6	87-90	1.35 ± 0.09	18.01 ± 1.49	0.82 ± 0.07	6.77 ± 0.59	0.38 ± 0.03	7.12 ± 1.54
α3	91-99	1.36 ± 0.07	18.96 ± 0.82	0.83 ± 0.05	8.38 ± 0.28	0.34 ± 0.01	5.21 ± 0.97
L7	100-101	1.33 ± 0.06	15.76 ± 0.53	0.73 ± 0.04	5.75 ± 0.08	0.33 ± 0.01	4.13 ± 0.49
α4	102-105	1.16 ± 0.06	16.69 ± 0.74	0.83 ± 0.05	5.04 ± 0.10	0.29 ± 0.01	3.14 ± 0.88
L8	106-109	1.24 ± 0.05	16.98 ± 0.52	0.84 ± 0.04	6.24 ± 0.14	0.31 ± 0.01	3.11 ± 0.76
β4	110-111	1.24 ± 0.06	14.06 ± 0.51	0.99 ± 0.05	4.95 ± 0.05	0.31 ± 0.01	2.73 ± 0.67
L9	112-113	1.31 ± 0.04	17.60 ± 0.54	0.86 ± 0.03	6.46 ± 0.05	0.33 ± 0.01	2.83 ± 0.54
α5	114-121	1.30 ± 0.06	13.80 ± 0.43	0.82 ± 0.03	6.23 ± 0.14	0.33 ± 0.01	3.67 ± 0.65
L10	122-124	1.29 ± 0.05	14.68 ± 0.51	0.90 ± 0.03	5.83 ± 0.16	0.32 ± 0.01	3.33 ± 0.61

Table S7: ^{15}N relaxation rates R_1 (sec^{-1}), R_2 (sec^{-1}), {^1H}-^{15}N heteronuclear NOEs recorded at 600.13 MHz, 300 K, and reduced spectral density function parameters {$J(0)$ (ns/rad), $J(\omega_N)$ (ns/rad), and $J(0.87\omega_H)$ (ps/rad)} of each secondary structured segment of Rv1739c STAS in the presence of 20 mM GDP.

structural segment	residue range	R_1	R_2	*NOE*	$J(0)$	$J(\omega_N)$	$J(0.87\omega_H)$
L1	1-15	1.29 ± 0.03	10.07 ± 0.18	0.46 ± 0.04	3.58 ± 0.07	0.30 ± 0.01	11.42 ± 0.74
β1	16-20	1.05 ± 0.04	16.57 ± 0.55	0.74 ± 0.05	6.12 ± 0.21	0.26 ± 0.01	4.26 ± 0.76
L2	21-29	1.03 ± 0.05	20.35 ± 1.71	0.72 ± 0.08	7.77 ± 0.63	0.26 ± 0.01	3.60 ± 1.05
α1	30-42	1.01 ± 0.03	18.13 ± 1.08	0.79 ± 0.05	6.49 ± 0.30	0.24 ± 0.01	4.37 ± 0.58
L3	43-49	0.99 ± 0.03	15.32 ± 0.47	0.68 ± 0.04	5.65 ± 0.18	0.24 ± 0.01	4.81 ± 0.54
β2	50-54	1.06 ± 0.04	18.55 ± 0.65	0.85 ± 0.05	6.65 ± 0.25	0.26 ± 0.01	3.31 ± 0.85
L4	55-64	1.14 ± 0.05	18.87 ± 1.04	0.66 ± 0.06	6.03 ± 0.24	0.28 ± 0.01	7.79 ± 0.73
α2	65-77	1.08 ± 0.03	20.94 ± 1.01	0.86 ± 0.05	6.74 ± 0.33	0.26 ± 0.01	3.05 ± 0.75
L5	78-80	1.02 ± 0.02	19.47 ± 0.91	0.85 ± 0.03	7.23 ± 0.35	0.25 ± 0.01	2.37 ± 0.54
β3	81-86	1.01 ± 0.03	16.13 ± 0.52	0.82 ± 0.05	5.96 ± 0.20	0.25 ± 0.01	2.91 ± 0.78
L6	87-90	1.01 ± 0.06	20.47 ± 1.93	1.15 ± 0.18	8.06 ± 0.46	0.23 ± 0.01	1.31 ± 1.19
α3	91-99	1.15 ± 0.05	17.23 ± 0.82	0.86 ± 0.07	5.75 ± 0.26	0.29 ± 0.01	2.65 ± 1.15
L7	100-101	1.09 ± 0.05	18.78 ± 0.61	0.86 ± 0.06	6.96 ± 0.23	0.25 ± 0.01	5.47 ± 0.53
α4	102-105	1.01 ± 0.05	17.09 ± 1.09	0.75 ± 0.05	7.04 ± 0.36	0.25 ± 0.01	3.97 ± 0.84
L8	106-109	1.04 ± 0.03	19.48 ± 0.62	0.82 ± 0.04	7.23 ± 0.23	0.26 ± 0.01	2.76 ± 0.73
β4	110-111	1.00 ± 0.03	17.67 ± 0.78	0.82 ± 0.05	6.55 ± 0.29	0.25 ± 0.01	2.85 ± 0.71
L9	112-113	0.96 ± 0.02	17.12 ± 0.80	0.96 ± 0.04	6.35 ± 0.32	0.24 ± 0.01	0.64 ± 0.53
α5	114-121	1.05 ± 0.03	19.76 ± 0.84	0.92 ± 0.05	7.23 ± 0.28	0.27 ± 0.01	1.10 ± 0.82
L10	122-124	1.04 ± 0.02	18.89 ± 0.87	0.79 ± 0.06	7.01 ± 0.33	0.26 ± 0.01	3.85 ± 0.56