

Supporting Information

Table 1S. The results of the SRLS analysis of ^{15}N relaxation data for RNase H of *E. Coli* acquired at 300 K and 500.13 MHz ^1H frequency²⁹.

Residue Model		S^2	S_f^2	$\tau_f(\text{ps})$	$\tau_s(\text{ns})$	$R_{\text{ex}}(\text{s}^{-1})$	χ^2
2	5	0.230 ± 0.044	0.755 ± 0.055		1.27 ± 0.08		0.000
5	1	0.795 ± 0.017					5.501
6	1	0.774 ± 0.009					1.555
8	1	0.797 ± 0.012					1.569
9	1	0.810 ± 0.008					1.444
10	1	0.805 ± 0.016					2.089
11	1	0.800 ± 0.007					7.901
13	5	0.235 ± 0.041	0.710 ± 0.008		5.21 ± 0.64		0.000
14	5	0.122 ± 0.071	0.787 ± 0.017		6.93 ± 0.91		0.000
15	5	0.247 ± 0.006	0.585 ± 0.009		2.14 ± 0.15		0.000
16	5	0.276 ± 0.015	0.755 ± 0.012		3.82 ± 0.23		0.000
18	1	0.792 ± 0.007					1.881
20	5	0.101 ± 0.082	0.829 ± 0.014		7.56 ± 1.09		0.000
21	1	0.801 ± 0.007					9.054
22	1	0.829 ± 0.008					0.066
23	1	0.803 ± 0.011					3.114
24	1	0.786 ± 0.007					4.215
25	1	0.774 ± 0.010					1.010
26	1	0.791 ± 0.009					0.214
27	3	0.765 ± 0.010				1.08 ± 0.33	0.431
28	1	0.782 ± 0.008					0.977
29	1	0.773 ± 0.007					7.366
30	5	0.297 ± 0.062	0.765 ± 0.018		4.30 ± 1.00		0.000
31	5	0.196 ± 0.060	0.744 ± 0.014		6.06 ± 0.82		0.000
33	1	0.743 ± 0.007					1.455
34	1	0.739 ± 0.006					6.363
35	1	0.777 ± 0.009					2.521
36	1	0.783 ± 0.005					6.750
37	1	0.775 ± 0.006					1.077
38	1	0.738 ± 0.013					1.062
39	1	0.802 ± 0.012					0.527
41	1	0.784 ± 0.005					0.554
42	1	0.796 ± 0.009					0.113
43	1	0.789 ± 0.008					0.167
44	3	0.757 ± 0.009				0.96 ± 0.36	0.029
45	3	0.754 ± 0.017				2.11 ± 0.41	0.129
46	1	0.839 ± 0.020					7.673
47	3	0.795 ± 0.010				0.85 ± 0.38	0.168
49	3	0.744 ± 0.016				2.47 ± 0.42	0.026
50	3	0.772 ± 0.016				1.07 ± 0.48	0.004
51	3	0.829 ± 0.013				0.65 ± 0.37	0.247
52	3	0.723 ± 0.006				2.30 ± 0.21	0.088
55	3	0.792 ± 0.006				1.15 ± 0.21	1.464

56	3	0.715 ± 0.014		2.34 ± 0.39	0.148
58	1	0.805 ± 0.006			0.297
59	4	0.722 ± 0.011	46.6 ± 22.3	1.83 ± 0.37	0.000
65	3	0.721 ± 0.010		1.64 ± 0.36	0.232
66	1	0.779 ± 0.009			1.753
67	3	0.805 ± 0.011		1.06 ± 0.42	0.407
68	1	0.777 ± 0.009			5.250
69	1	0.828 ± 0.010			0.790
70	1	0.855 ± 0.018			2.632
71	1	0.792 ± 0.010			2.102
72	1	0.840 ± 0.011			1.943
74	1	0.809 ± 0.022			2.701
75	3	0.816 ± 0.010		0.81 ± 0.37	0.139
78	3	0.790 ± 0.010		0.92 ± 0.38	0.308
81	4	0.655 ± 0.012	54.6 ± 13.6	0.88 ± 0.29	0.000
82	3	0.767 ± 0.007		1.84 ± 0.25	0.783
83	1	0.827 ± 0.007			2.519
84	4	0.715 ± 0.013	96.0 ± 20.7	0.58 ± 0.17	0.000
86	3	0.781 ± 0.007		1.00 ± 0.23	0.657
87	1	0.790 ± 0.005			0.003
88	4	0.704 ± 0.010	59.1 ± 15.9	0.60 ± 0.23	0.000
89	1	0.737 ± 0.006			7.716
90	3	0.819 ± 0.010		2.34 ± 0.31	0.012
91	3	0.743 ± 0.006		1.58 ± 0.21	1.238
92	1	0.749 ± 0.005			3.076
93	1	0.789 ± 0.015			5.069
94	2	0.721 ± 0.014	162.2 ± 49.9		0.114
95	1	0.767 ± 0.006			7.775
98	2	0.698 ± 0.007	136.4 ± 18.5		1.386
99	1	0.782 ± 0.006			2.307
100	3	0.756 ± 0.009		1.78 ± 0.34	0.005
101	3	0.752 ± 0.006		1.97 ± 0.21	0.086
102	3	0.798 ± 0.007		1.22 ± 0.20	0.010
103	3	0.721 ± 0.007		1.83 ± 0.28	0.484
104	3	0.755 ± 0.011		2.02 ± 0.33	0.800
105	3	0.766 ± 0.008		1.74 ± 0.25	0.050
106	3	0.759 ± 0.007		1.23 ± 0.23	0.000
107	4	0.761 ± 0.012	47.7 ± 26.9	2.11 ± 0.48	0.000
109	3	0.759 ± 0.006		1.42 ± 0.21	0.055
110	3	0.746 ± 0.006		1.27 ± 0.21	0.035
111	3	0.739 ± 0.006		1.55 ± 0.23	0.376
112	3	0.738 ± 0.007		1.23 ± 0.23	0.380
114	3	0.788 ± 0.011		1.23 ± 0.29	0.319
115	4	0.726 ± 0.013	65.4 ± 25.5	0.91 ± 0.31	0.000
116	3	0.678 ± 0.006		1.61 ± 0.21	1.554
117	3	0.755 ± 0.010		0.85 ± 0.43	0.133
118	1	0.728 ± 0.007			0.346
119	1	0.786 ± 0.008			0.147
120	1	0.718 ± 0.006			0.380
121	5	0.196 ± 0.007	0.788 ± 0.022	6.08 ± 0.95	0.000
122	1	0.739 ± 0.006			11.13
123	5	0.284 ± 0.006	0.739 ± 0.007	1.78 ± 0.04	0.000
124	5	0.280 ± 0.028	0.783 ± 0.028	3.43 ± 0.34	0.000
125	5	0.312 ± 0.009	0.769 ± 0.010	2.98 ± 0.11	0.000
126	5	0.259 ± 0.014	0.734 ± 0.010	3.51 ± 0.26	0.000
127	5	0.308 ± 0.018	0.765 ± 0.012	4.13 ± 0.29	0.000
129	1	0.789 ± 0.007			3.619

130	1	0.794 ± 0.014				4.487
131	3	0.766 ± 0.012			1.31 ± 0.31	0.658
132	1	0.797 ± 0.006				4.590
133	3	0.792 ± 0.011			0.63 ± 0.36	0.084
134	3	0.809 ± 0.010			0.72 ± 0.39	0.105
135	3	0.751 ± 0.011			1.25 ± 0.26	0.119
136	1	0.792 ± 0.008				8.929
139	1	0.771 ± 0.010				15.67
140	1	0.807 ± 0.007				1.068
141	3	0.787 ± 0.008			0.94 ± 0.22	0.349
142	3	0.727 ± 0.007			1.52 ± 0.21	0.004
143	4	0.703 ± 0.012		43.6 ± 14.9	0.54 ± 0.17	0.000
145	1	0.722 ± 0.008				3.382
146	1	0.756 ± 0.014				2.659
147	1	0.725 ± 0.006				2.871
148	1	0.754 ± 0.009				1.187
150	1	0.752 ± 0.006				2.303
151	1	0.782 ± 0.005				1.457
153	5	0.268 ± 0.003	0.706 ± 0.004		1.97 ± 0.04	0.000
154	5	0.212 ± 0.003	0.725 ± 0.008		1.44 ± 0.05	0.000
155	5	0.074 ± 0.002	0.599 ± 0.008		0.84 ± 0.02	0.000