Full wwPDB EM Validation Report ⓘ

Nov 19, 2022 – 01:37 pm GMT

PDB ID	:	5M1J
EMDB ID	:	EMD-4140
Title	:	Nonstop ribosomal complex bound with Dom34 and Hbs1
Authors	:	Hilal, T.; Yamamoto, H.; Loerke, J.; Buerger, J.; Mielke, T.; Spahn, C.M.T.
Deposited on	:	2016-10-07
Resolution	:	3.30 Å(reported)

This is a Full wwPDB EM Validation Report for a publicly released PDB entry.

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/EMValidationReportHelp
with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at
http://www.wwpdb.org/validation/2017/FAQs#types.

The following versions of software and data (see references ⓘ) were used in the production of this report:

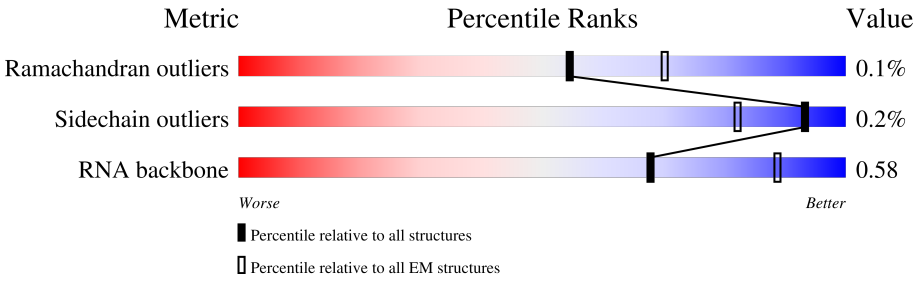
EMDB validation analysis	:	0.0.1.dev43
Mogul	:	1.8.4, CSD as541be (2020)
MolProbity	:	4.02b-467
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ	:	1.9.9
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.31.2

1 Overall quality at a glance

The following experimental techniques were used to determine the structure:
ELECTRON MICROSCOPY

The reported resolution of this entry is 3.30 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



Metric	Whole archive (#Entries)	EM structures (#Entries)
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826
RNA backbone	4643	859

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=5% The upper red bar (where present) indicates the fraction of residues that have poor fit to the EM map (all-atom inclusion < 40%). The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A1	381	43% 99%
2	A2	207	15% 100%
3	a2	98	9% 99%
4	B2	214	16% 100%
5	b2	81	14% 100%
6	C2	217	5% 100%
7	c2	63	11% 98%
8	D2	223	19% 100%

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Mol	Chain	Length	Quality of chain
9	d2	53	6% 100%
10	E2	260	10% 100%
11	e2	60	27% 100%
12	F2	206	21% 100%
13	G2	226	21% 99%
14	g2	318	29% 100%
15	H2	184	33% 100%
16	I2	199	13% 94% 6%
17	J2	185	9% 98%
18	K2	96	25% 100%
19	L2	155	17% 100%
20	M2	124	94% 99%
21	N2	150	9% 100%
22	O2	127	100%
23	P2	124	32% 99%
24	Q2	141	14% 100%
25	R2	125	22% 99%
26	S2	145	26% 99%
27	T2	143	18% 100%
28	U2	107	25% 100%
29	V2	87	16% 100%
30	W2	129	100%
31	X2	144	7% 99%
32	Y2	134	19% 100%
33	Z2	70	17% 100%

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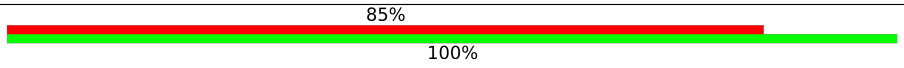
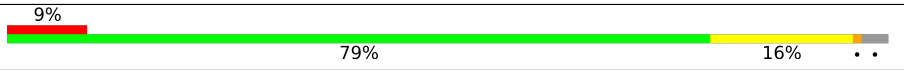
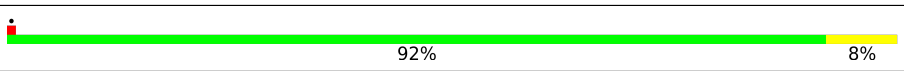
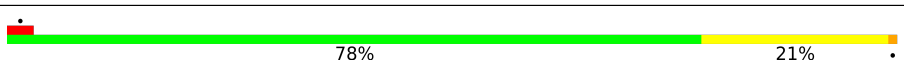
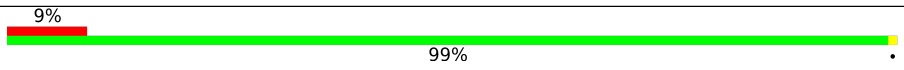
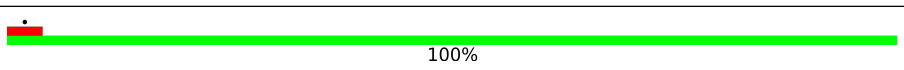
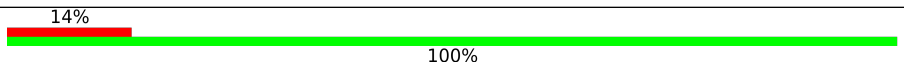
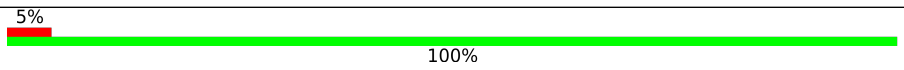
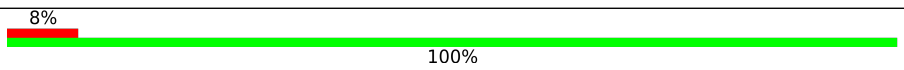
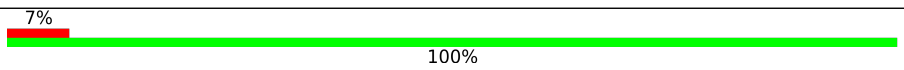
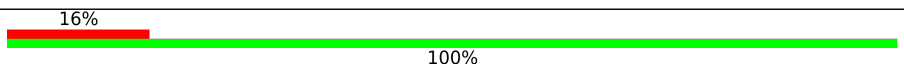
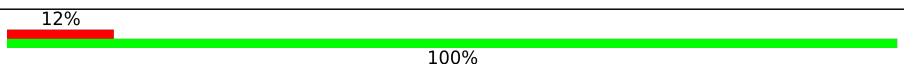
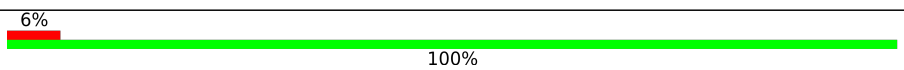
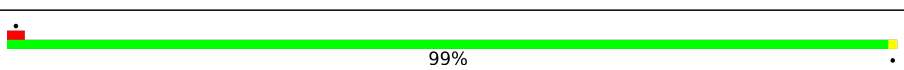
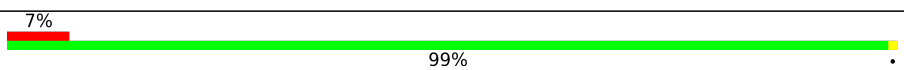
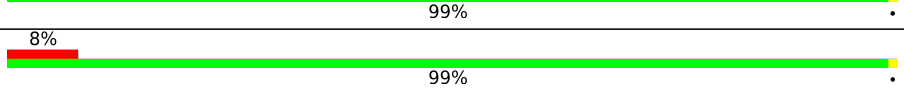
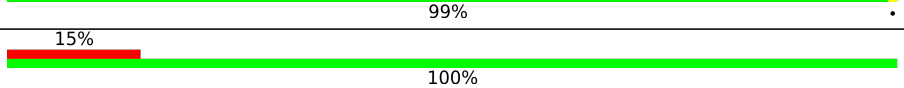
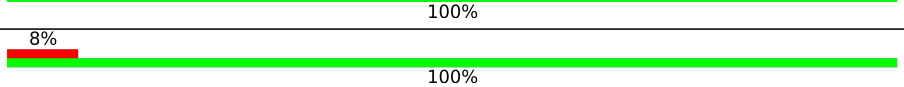
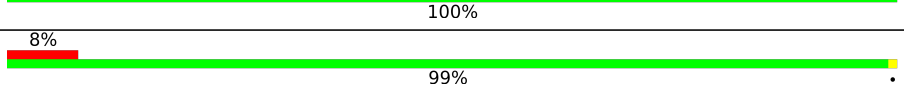
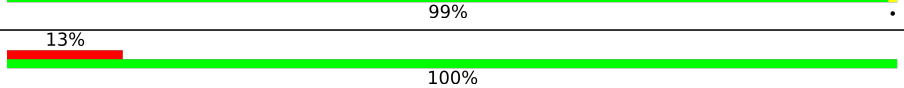
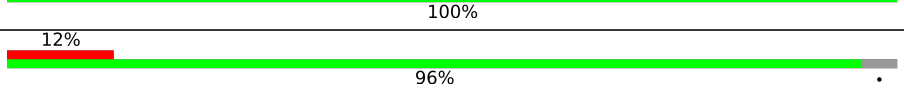
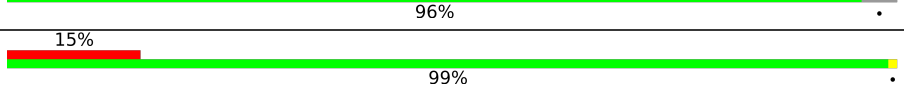
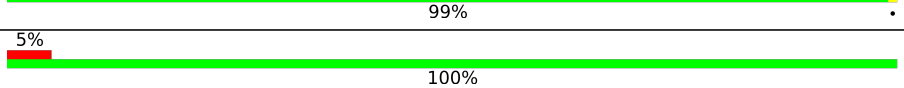
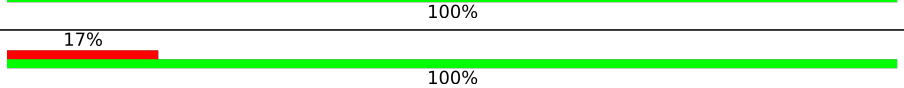
Mol	Chain	Length	Quality of chain
34	22	1798	
35	f2	71	
36	14	3396	
37	34	121	
38	44	158	
39	a5	148	
40	A5	252	
41	b5	58	
42	B5	386	
43	c5	97	
44	C5	361	
45	D5	296	
46	d5	109	
47	e5	127	
48	f5	106	
49	F5	222	
50	g5	112	
51	G5	233	
52	h5	119	
53	H5	191	
54	i5	99	
55	I5	220	
56	J5	169	
57	j5	87	
58	k5	77	

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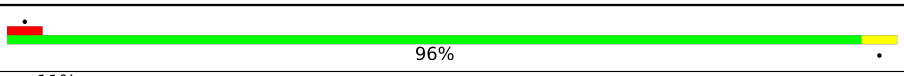
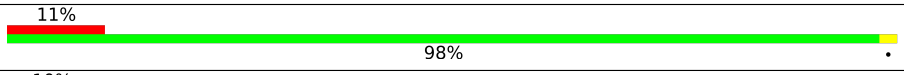
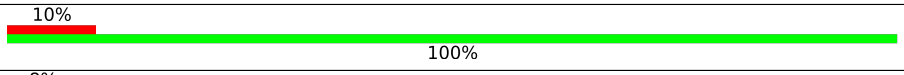
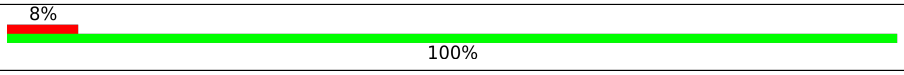
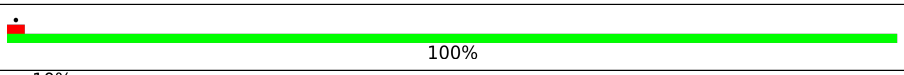
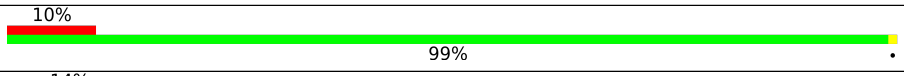
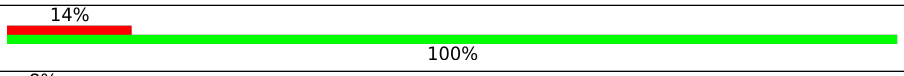
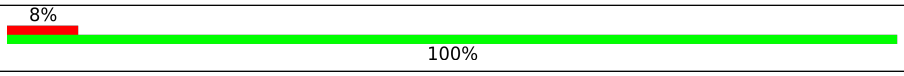
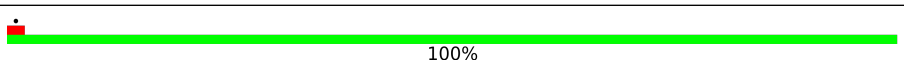
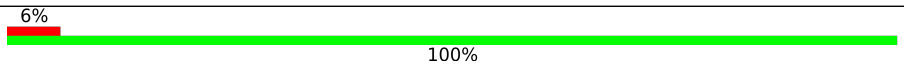
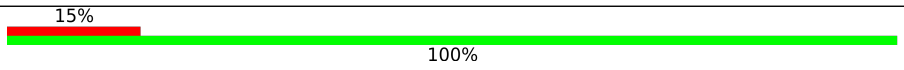
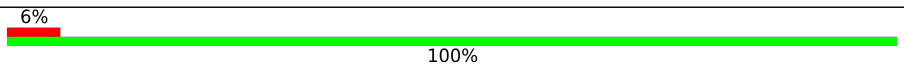
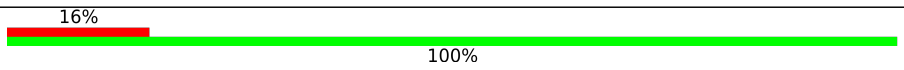
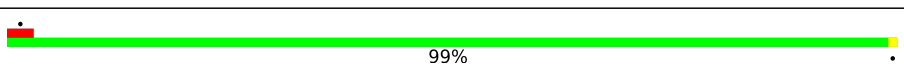
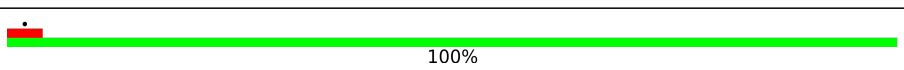
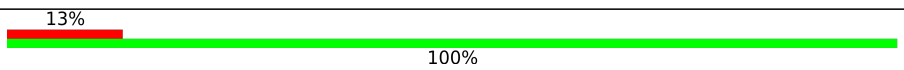
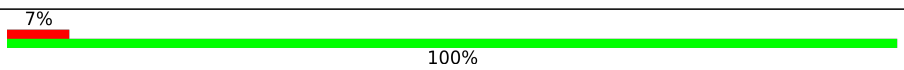
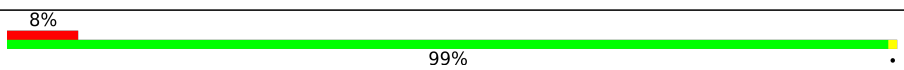
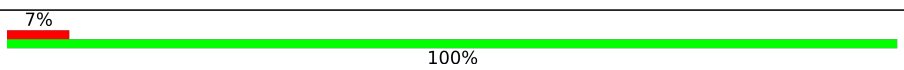
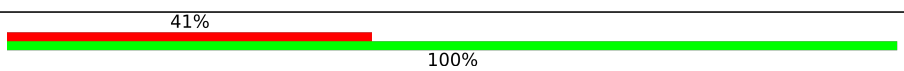
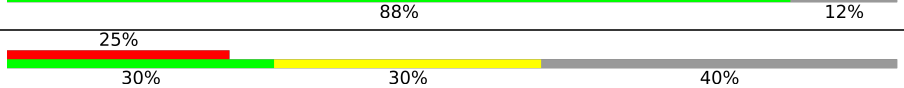
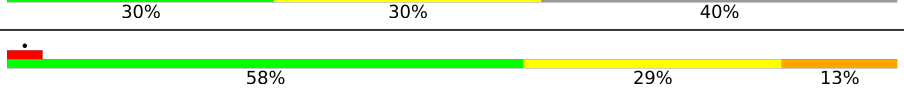
Mol	Chain	Length	Quality of chain
59	l5	50	
60	L5	193	
61	m5	52	
62	M5	136	
63	N5	203	
64	o5	105	
65	p5	91	
66	P5	183	
67	Q5	185	
68	S5	172	
69	U5	100	
70	V5	136	
71	Z5	135	
72	K5	197	
73	n5	25	
74	R5	188	
75	X5	121	
76	Y5	126	
77	T5	159	
78	E5	175	
79	W5	98	
80	A6	611	
81	X7	20	
82	A3	76	

2 Entry composition

There are 87 unique types of molecules in this entry. The entry contains 212865 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the AltConf column contains the number of residues with at least one atom in alternate conformation and the Trace column contains the number of residues modelled with at most 2 atoms.

- Molecule 1 is a protein called Protein DOM34.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A1	381	3058	1976	478	589	15	0	0

- Molecule 2 is a protein called 40S ribosomal protein S0-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	A2	207	1621	1039	286	294	2	0	0

- Molecule 3 is a protein called 40S ribosomal protein S26-B.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	a2	98	778	480	162	131	5	0	0

- Molecule 4 is a protein called 40S ribosomal protein S1-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	B2	214	1709	1084	310	311	4	0	0

- Molecule 5 is a protein called 40S ribosomal protein S27-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	b2	81	610	382	110	113	5	0	0

- Molecule 6 is a protein called 40S ribosomal protein S2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	C2	217	1635	1047	289	297	2	0	0

- Molecule 7 is a protein called 40S ribosomal protein S28-B.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	c2	63	Total	C	N	O	S	0	0
			497	306	99	91	1		

- Molecule 8 is a protein called 40S ribosomal protein S3.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	D2	223	Total	C	N	O	S	0	0
			1734	1101	313	314	6		

- Molecule 9 is a protein called 40S ribosomal protein S29-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	d2	53	Total	C	N	O	S	0	0
			443	275	92	72	4		

- Molecule 10 is a protein called 40S ribosomal protein S4-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	E2	260	Total	C	N	O	S	0	0
			2068	1316	389	360	3		

- Molecule 11 is a protein called 40S ribosomal protein S30-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	e2	60	Total	C	N	O	S	0	0
			475	299	98	77	1		

- Molecule 12 is a protein called 40S ribosomal protein S5.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	F2	206	Total	C	N	O	S	0	0
			1609	1007	300	299	3		

- Molecule 13 is a protein called 40S ribosomal protein S6-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
13	G2	226	Total	C	N	O	S	0	0
			1820	1142	350	325	3		

- Molecule 14 is a protein called Guanine nucleotide-binding protein subunit beta-like protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	g2	318	Total	C	N	O	S	0	0
			2445	1546	419	472	8		

- Molecule 15 is a protein called 40S ribosomal protein S7-A.

Mol	Chain	Residues	Atoms				AltConf	Trace
15	H2	184	Total	C	N	O	0	0
			1481	951	265	265		

- Molecule 16 is a protein called 40S ribosomal protein S8-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	I2	188	Total	C	N	O	S	0	0
			1489	925	298	264	2		

- Molecule 17 is a protein called 40S ribosomal protein S9-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
17	J2	185	Total	C	N	O	S	0	0
			1494	943	289	261	1		

- Molecule 18 is a protein called 40S ribosomal protein S10-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
18	K2	96	Total	C	N	O	S	0	0
			817	529	133	153	2		

- Molecule 19 is a protein called 40S ribosomal protein S11-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
19	L2	155	Total	C	N	O	S	0	0
			1244	798	235	208	3		

- Molecule 20 is a protein called 40S ribosomal protein S12.

Mol	Chain	Residues	Atoms					AltConf	Trace
20	M2	124	Total	C	N	O	S	0	0
			934	587	165	180	2		

- Molecule 21 is a protein called 40S ribosomal protein S13.

Mol	Chain	Residues	Atoms					AltConf	Trace
21	N2	150	Total	C	N	O	S	0	0
			1192	759	224	207	2		

- Molecule 22 is a protein called 40S ribosomal protein S14-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	O2	127	Total	C	N	O	S	0	0
			941	578	186	174	3		

- Molecule 23 is a protein called 40S ribosomal protein S15.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	P2	124	Total	C	N	O	S	0	0
			991	631	187	166	7		

- Molecule 24 is a protein called 40S ribosomal protein S16-A.

Mol	Chain	Residues	Atoms				AltConf	Trace
24	Q2	141	Total	C	N	O	0	0
			1105	708	203	194		

- Molecule 25 is a protein called 40S ribosomal protein S17-B.

Mol	Chain	Residues	Atoms					AltConf	Trace
25	R2	125	Total	C	N	O	S	0	0
			1000	625	188	185	2		

- Molecule 26 is a protein called 40S ribosomal protein S18-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
26	S2	145	Total	C	N	O	S	0	0
			1192	743	237	210	2		

- Molecule 27 is a protein called 40S ribosomal protein S19-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
27	T2	143	Total	C	N	O	S	0	0
			1112	694	208	208	2		

- Molecule 28 is a protein called 40S ribosomal protein S20.

Mol	Chain	Residues	Atoms					AltConf	Trace
28	U2	107	Total	C	N	O	S	0	0
			855	539	156	159	1		

- Molecule 29 is a protein called 40S ribosomal protein S21-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
29	V2	87	Total	C	N	O	S	0	0
			684	420	125	137	2		

- Molecule 30 is a protein called 40S ribosomal protein S22-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
30	W2	129	Total	C	N	O	S	0	0
			1021	650	188	180	3		

- Molecule 31 is a protein called 40S ribosomal protein S23-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
31	X2	144	Total	C	N	O	S	0	0
			1121	708	220	191	2		

- Molecule 32 is a protein called 40S ribosomal protein S24-A.

Mol	Chain	Residues	Atoms				AltConf	Trace
32	Y2	134	Total	C	N	O	0	0
			1073	676	208	189		

- Molecule 33 is a protein called 40S ribosomal protein S25-A.

Mol	Chain	Residues	Atoms				AltConf	Trace
33	Z2	70	Total	C	N	O	0	0
			563	360	104	99		

- Molecule 34 is a RNA chain called 18S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
34	22	1781	Total	C	N	O	P	0	0
			37948	16965	6715	12487	1781		

- Molecule 35 is a protein called Ubiquitin-40S ribosomal protein S31.

Mol	Chain	Residues	Atoms					AltConf	Trace
35	f2	71	Total	C	N	O	S	0	0
			497	309	93	91	4		

- Molecule 36 is a RNA chain called 25S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
36	14	3295	Total	C	N	O	P	0	0
			70476	31477	12696	23008	3295		

- Molecule 37 is a RNA chain called 5S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
37	34	121	Total	C	N	O	P	0	0
			2579	1152	461	845	121		

- Molecule 38 is a RNA chain called 5.8S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
38	44	158	Total	C	N	O	P	0	0
			3353	1500	586	1109	158		

- Molecule 39 is a protein called 60S ribosomal protein L28.

Mol	Chain	Residues	Atoms					AltConf	Trace
39	a5	148	Total	C	N	O	S	0	0
			1173	749	231	190	3		

- Molecule 40 is a protein called 60S ribosomal protein L2-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
40	A5	252	Total	C	N	O	S	0	0
			1918	1193	389	335	1		

- Molecule 41 is a protein called 60S ribosomal protein L29.

Mol	Chain	Residues	Atoms				AltConf	Trace
41	b5	58	Total	C	N	O	0	0
			462	289	100	73		

- Molecule 42 is a protein called 60S ribosomal protein L3.

Mol	Chain	Residues	Atoms					AltConf	Trace
42	B5	386	Total	C	N	O	S	0	0
			3081	1956	584	533	8		

- Molecule 43 is a protein called 60S ribosomal protein L30.

Mol	Chain	Residues	Atoms					AltConf	Trace
43	c5	97	Total	C	N	O	S	0	0
			743	479	124	139	1		

- Molecule 44 is a protein called 60S ribosomal protein L4-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
44	C5	361	Total	C	N	O	S	0	0
			2749	1730	522	494	3		

- Molecule 45 is a protein called 60S ribosomal protein L5.

Mol	Chain	Residues	Atoms					AltConf	Trace
45	D5	296	Total	C	N	O	S	0	0
			2375	1501	414	458	2		

- Molecule 46 is a protein called 60S ribosomal protein L31-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
46	d5	109	Total	C	N	O	S	0	0
			890	565	168	156	1		

- Molecule 47 is a protein called 60S ribosomal protein L32.

Mol	Chain	Residues	Atoms					AltConf	Trace
47	e5	127	Total	C	N	O	S	0	0
			1020	647	205	167	1		

- Molecule 48 is a protein called 60S ribosomal protein L33-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
48	f5	106	Total	C	N	O	S	0	0
			850	540	165	144	1		

- Molecule 49 is a protein called 60S ribosomal protein L7-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
49	F5	222	Total	C	N	O	S	0	0
			1784	1151	324	308	1		

- Molecule 50 is a protein called 60S ribosomal protein L34-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
50	g5	112	Total	C	N	O	S	0	0
			881	546	179	152	4		

- Molecule 51 is a protein called 60S ribosomal protein L8-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
51	G5	233	Total	C	N	O	S	0	0
			1817	1159	326	329	3		

- Molecule 52 is a protein called 60S ribosomal protein L35-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
52	h5	119	Total	C	N	O	S	0	0
			969	615	186	167	1		

- Molecule 53 is a protein called 60S ribosomal protein L9-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
53	H5	191	Total	C	N	O	S	0	0
			1518	963	274	277	4		

- Molecule 54 is a protein called 60S ribosomal protein L36-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
54	i5	99	Total	C	N	O	S	0	0
			771	481	156	132	2		

- Molecule 55 is a protein called 60S ribosomal protein L10.

Mol	Chain	Residues	Atoms					AltConf	Trace
55	I5	211	Total	C	N	O	S	0	0
			1717	1089	325	297	6		

- Molecule 56 is a protein called 60S ribosomal protein L11-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
56	J5	169	Total	C	N	O	S	0	0
			1353	847	253	249	4		

- Molecule 57 is a protein called 60S ribosomal protein L37-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
57	j5	87	Total	C	N	O	S	0	0
			681	414	148	114	5		

- Molecule 58 is a protein called 60S ribosomal protein L38.

Mol	Chain	Residues	Atoms				AltConf	Trace
58	k5	77	Total	C	N	O	0	0
			612	391	115	106		

- Molecule 59 is a protein called 60S ribosomal protein L39.

Mol	Chain	Residues	Atoms					AltConf	Trace
59	l5	50	Total	C	N	O	S	0	0
			436	272	97	65	2		

- Molecule 60 is a protein called 60S ribosomal protein L13-A.

Mol	Chain	Residues	Atoms				AltConf	Trace
60	L5	193	Total	C	N	O	0	0
			1543	962	315	266		

- Molecule 61 is a protein called Ubiquitin-60S ribosomal protein L40.

Mol	Chain	Residues	Atoms					AltConf	Trace
61	m5	52	Total	C	N	O	S	0	0
			417	259	86	67	5		

- Molecule 62 is a protein called 60S ribosomal protein L14-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
62	M5	136	Total	C	N	O	S	0	0
			1053	675	199	177	2		

- Molecule 63 is a protein called 60S ribosomal protein L15-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
63	N5	203	Total	C	N	O	S	0	0
			1720	1077	361	281	1		

- Molecule 64 is a protein called 60S ribosomal protein L42-B.

Mol	Chain	Residues	Atoms					AltConf	Trace
64	o5	105	Total	C	N	O	S	0	0
			847	534	170	138	5		

- Molecule 65 is a protein called 60S ribosomal protein L43-B.

Mol	Chain	Residues	Atoms					AltConf	Trace
65	p5	91	Total	C	N	O	S	0	0
			694	429	138	121	6		

- Molecule 66 is a protein called 60S ribosomal protein L17-A.

Mol	Chain	Residues	Atoms				AltConf	Trace
66	P5	183	Total	C	N	O	0	0
			1442	896	287	259		

- Molecule 67 is a protein called 60S ribosomal protein L18-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
67	Q5	185	Total	C	N	O	S	0	0
			1441	908	290	241	2		

- Molecule 68 is a protein called 60S ribosomal protein L20-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
68	S5	172	Total	C	N	O	S	0	0
			1445	930	267	244	4		

- Molecule 69 is a protein called 60S ribosomal protein L22-A.

Mol	Chain	Residues	Atoms				AltConf	Trace
69	U5	100	Total	C	N	O	0	0
			796	516	131	149		

- Molecule 70 is a protein called 60S ribosomal protein L23-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
70	V5	136	Total	C	N	O	S	0	0
			1003	628	189	179	7		

- Molecule 71 is a protein called 60S ribosomal protein L27-A.

Mol	Chain	Residues	Atoms				AltConf	Trace
71	Z5	135	Total	C	N	O	0	0
			1092	710	202	180		

- Molecule 72 is a protein called 60S ribosomal protein L16-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
72	K5	197	Total	C	N	O	S	0	0
			1555	1003	289	262	1		

- Molecule 73 is a protein called 60S ribosomal protein L41-B.

Mol	Chain	Residues	Atoms					AltConf	Trace
73	n5	25	Total	C	N	O	S	0	0
			233	142	63	27	1		

- Molecule 74 is a protein called 60S ribosomal protein L19-A.

Mol	Chain	Residues	Atoms				AltConf	Trace
74	R5	188	Total	C	N	O	0	0
			1521	935	326	260		

- Molecule 75 is a protein called 60S ribosomal protein L25.

Mol	Chain	Residues	Atoms					AltConf	Trace
75	X5	121	Total	C	N	O	S	0	0
			968	623	170	173	2		

- Molecule 76 is a protein called 60S ribosomal protein L26-A.

Mol	Chain	Residues	Atoms				AltConf	Trace
76	Y5	126	Total	C	N	O	0	0
			993	625	192	176		

- Molecule 77 is a protein called 60S ribosomal protein L21-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
77	T5	159	Total	C	N	O	S	0	0
			1276	805	246	221	4		

- Molecule 78 is a protein called 60S ribosomal protein L6-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
78	E5	157	Total	C	N	O	S	0	0
			1248	806	224	217	1		

- Molecule 79 is a protein called 60S ribosomal protein L24-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
79	W5	98	Total	C	N	O	S	0	0
			800	508	159	132	1		

- Molecule 80 is a protein called Protein HBS1.

Mol	Chain	Residues	Atoms					AltConf	Trace
80	A6	539	Total	C	N	O	S	0	0
			4279	2712	723	827	17		

- Molecule 81 is a RNA chain called nonstop mRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
81	X7	12	Total	C	N	O	P	0	0
			259	116	49	82	12		

- Molecule 82 is a RNA chain called yeast Phe-tRNA-Phe.

Mol	Chain	Residues	Atoms					AltConf	Trace
82	A3	76	Total	C	N	O	P	0	0
			1651	745	294	536	76		

- Molecule 83 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		AltConf
83	a2	1	Total	Zn	0
			1	1	
83	b2	1	Total	Zn	0
			1	1	
83	d2	1	Total	Zn	0
			1	1	

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Mol	Chain	Residues	Atoms	AltConf
83	f2	1	Total Zn 1 1	0
83	j5	1	Total Zn 1 1	0
83	m5	1	Total Zn 1 1	0
83	o5	1	Total Zn 1 1	0
83	p5	1	Total Zn 1 1	0

- Molecule 84 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms	AltConf
84	B2	1	Total Mg 1 1	0
84	C2	2	Total Mg 2 2	0
84	d2	1	Total Mg 1 1	0
84	E2	2	Total Mg 2 2	0
84	F2	2	Total Mg 2 2	0
84	I2	2	Total Mg 2 2	0
84	J2	1	Total Mg 1 1	0
84	L2	1	Total Mg 1 1	0
84	N2	2	Total Mg 2 2	0
84	Q2	1	Total Mg 1 1	0
84	S2	4	Total Mg 4 4	0
84	T2	1	Total Mg 1 1	0
84	U2	1	Total Mg 1 1	0
84	X2	3	Total Mg 3 3	0

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Mol	Chain	Residues	Atoms	AltConf
84	Y2	1	Total Mg 1 1	0
84	22	177	Total Mg 177 177	0
84	14	701	Total Mg 701 701	0
84	34	16	Total Mg 16 16	0
84	44	34	Total Mg 34 34	0
84	a5	3	Total Mg 3 3	0
84	A5	6	Total Mg 6 6	0
84	b5	1	Total Mg 1 1	0
84	B5	5	Total Mg 5 5	0
84	C5	8	Total Mg 8 8	0
84	D5	1	Total Mg 1 1	0
84	d5	3	Total Mg 3 3	0
84	e5	3	Total Mg 3 3	0
84	f5	1	Total Mg 1 1	0
84	F5	4	Total Mg 4 4	0
84	I5	4	Total Mg 4 4	0
84	J5	2	Total Mg 2 2	0
84	j5	7	Total Mg 7 7	0
84	l5	1	Total Mg 1 1	0
84	L5	4	Total Mg 4 4	0
84	m5	3	Total Mg 3 3	0

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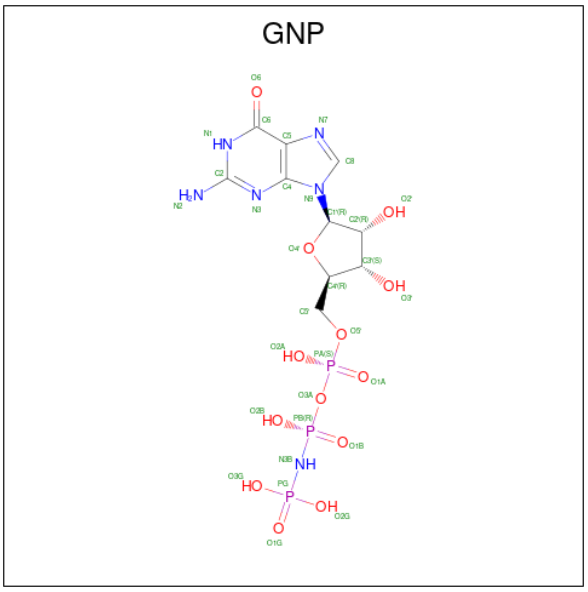
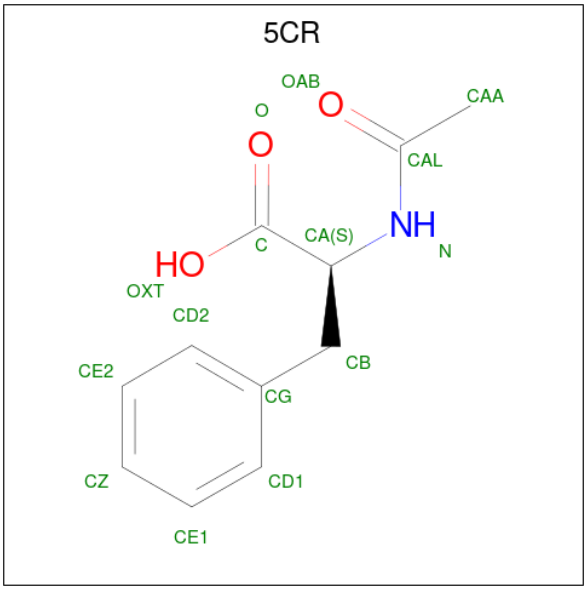
Mol	Chain	Residues	Atoms	AltConf
84	M5	1	Total Mg 1 1	0
84	N5	7	Total Mg 7 7	0
84	o5	3	Total Mg 3 3	0
84	P5	7	Total Mg 7 7	0
84	Q5	4	Total Mg 4 4	0
84	S5	4	Total Mg 4 4	0
84	V5	3	Total Mg 3 3	0
84	K5	5	Total Mg 5 5	0
84	R5	3	Total Mg 3 3	0
84	Y5	2	Total Mg 2 2	0
84	T5	1	Total Mg 1 1	0
84	E5	1	Total Mg 1 1	0
84	A6	2	Total Mg 2 2	0
84	A3	6	Total Mg 6 6	0

- Molecule 85 is PHOSPHOAMINOPHOSPHONIC ACID-GUANYLATE ESTER (three-letter code: GNP) (formula: $C_{10}H_{17}N_6O_{13}P_3$).



Mol	Chain	Residues	Atoms					AltConf
85	A6	1	Total	C	N	O	P	0
			32	10	6	13	3	

- Molecule 86 is N-acetyl-L-phenylalanine (three-letter code: 5CR) (formula: $C_{11}H_{13}NO_3$).



Mol	Chain	Residues	Atoms				AltConf
86	A3	1	Total	C	N	O	0
			14	11	1	2	

- Molecule 87 is water.

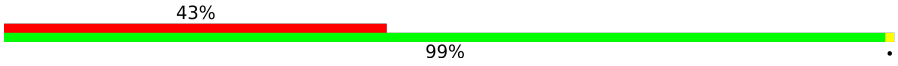
Mol	Chain	Residues	Atoms	AltConf
87	A1	7	Total O 7 7	0
87	A6	6	Total O 6 6	0

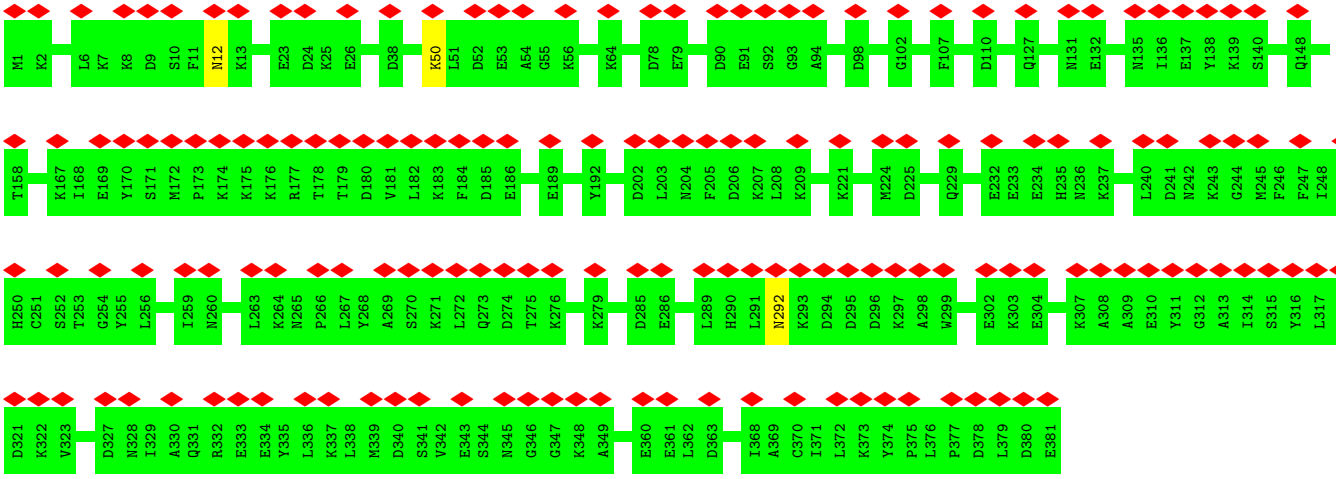
3 Residue-property plots (i)

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion in map density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red diamond above a residue indicates a poor fit to the EM map for this residue (all-atom inclusion < 40%). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

• Molecule 1: Protein DOM34

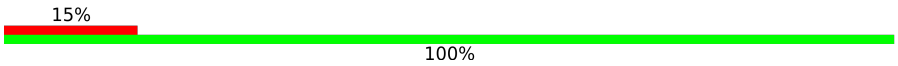
Chain A1:

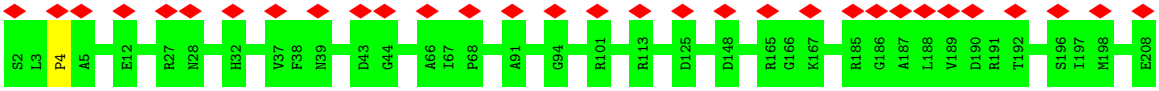




• Molecule 2: 40S ribosomal protein S0-A

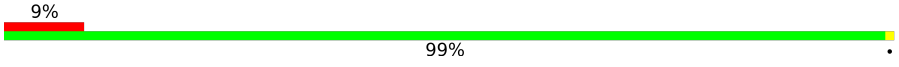
Chain A2:

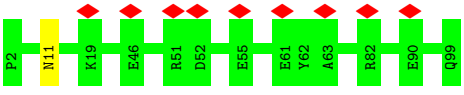




• Molecule 3: 40S ribosomal protein S26-B

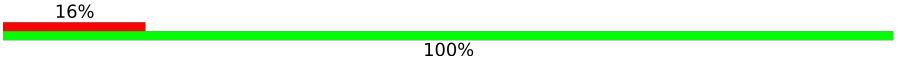
Chain a2:

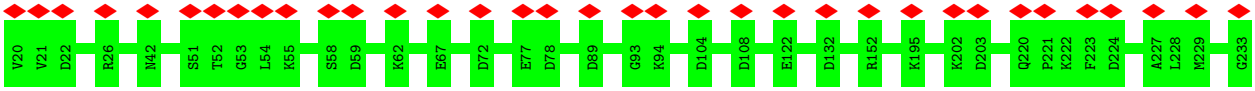




• Molecule 4: 40S ribosomal protein S1-A

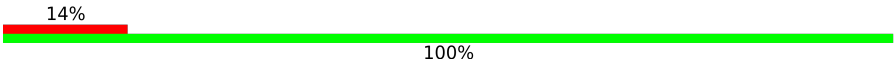
Chain B2:

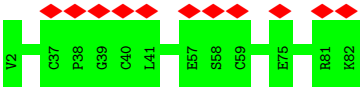




• Molecule 5: 40S ribosomal protein S27-A

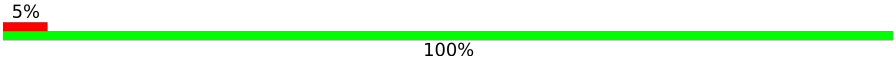
Chain b2:

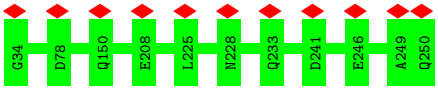




• Molecule 6: 40S ribosomal protein S2

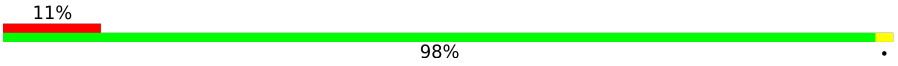
Chain C2:

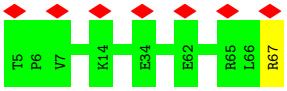




• Molecule 7: 40S ribosomal protein S28-B

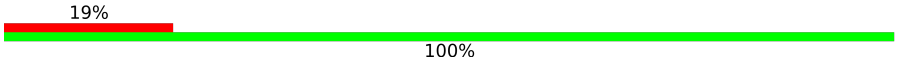
Chain c2:

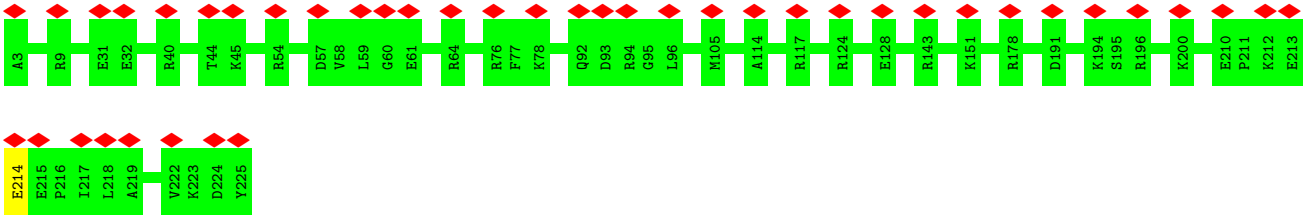




• Molecule 8: 40S ribosomal protein S3

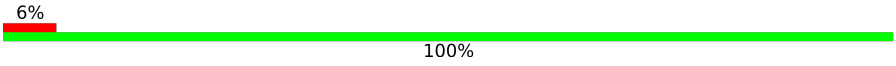
Chain D2:

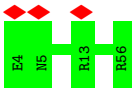




• Molecule 9: 40S ribosomal protein S29-A

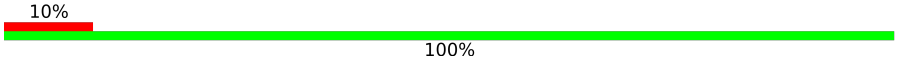
Chain d2:

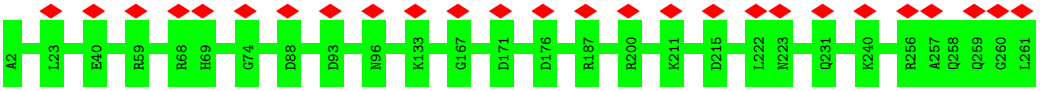




• Molecule 10: 40S ribosomal protein S4-A

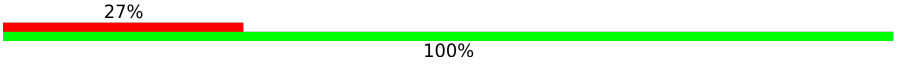
Chain E2:

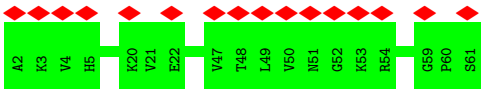




• Molecule 11: 40S ribosomal protein S30-A

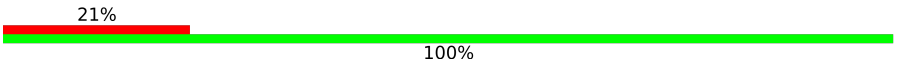
Chain e2:

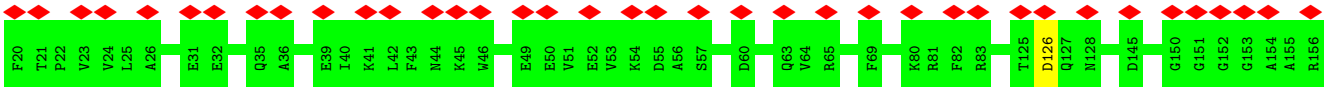


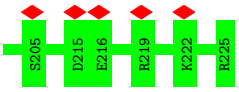


• Molecule 12: 40S ribosomal protein S5

Chain F2:

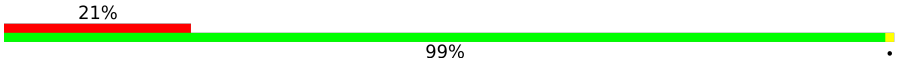


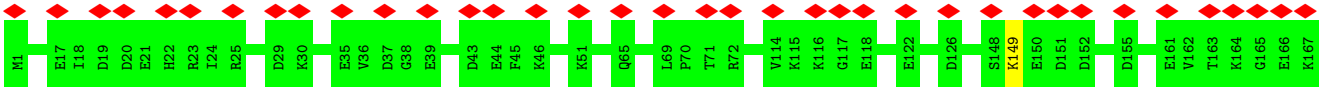


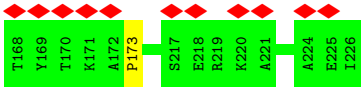


• Molecule 13: 40S ribosomal protein S6-A

Chain G2:

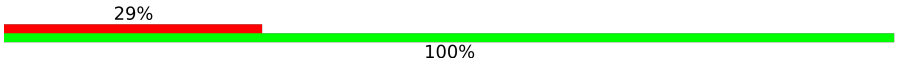


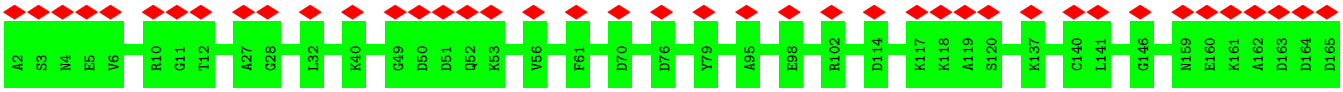


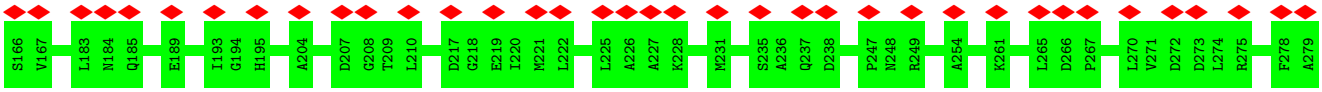


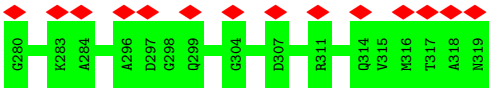
• Molecule 14: Guanine nucleotide-binding protein subunit beta-like protein

Chain g2:



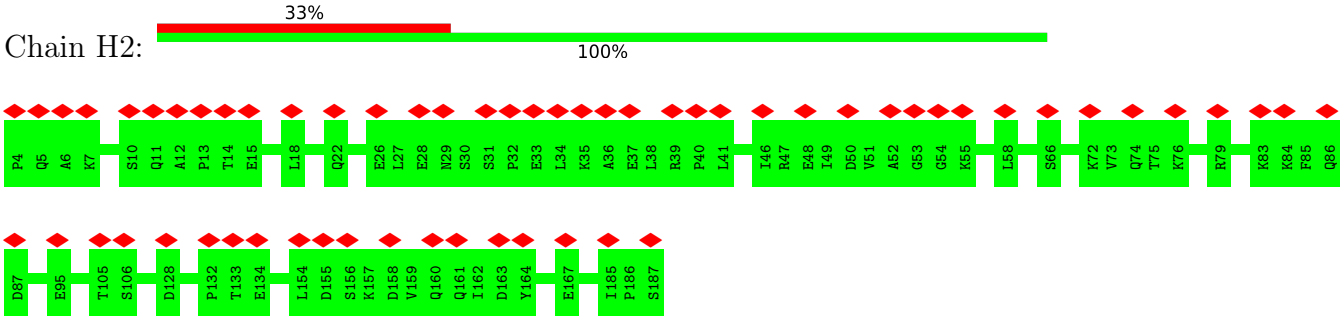






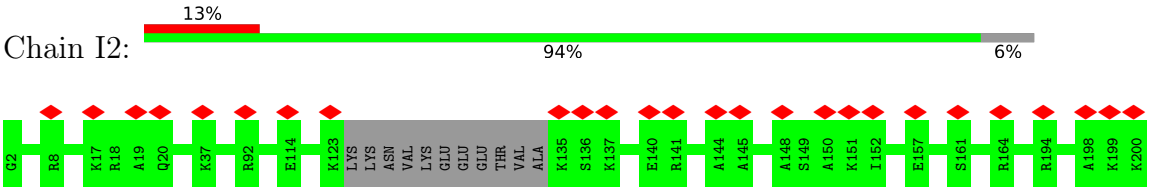
• Molecule 15: 40S ribosomal protein S7-A

Chain H2:



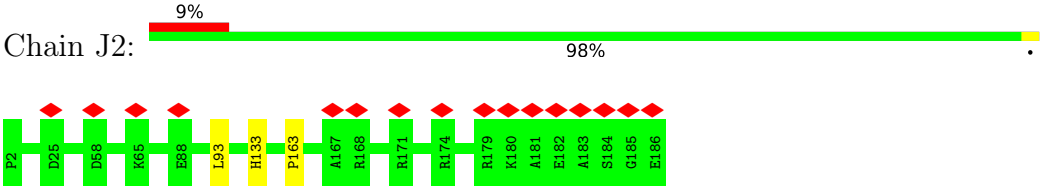
• Molecule 16: 40S ribosomal protein S8-A

Chain I2:



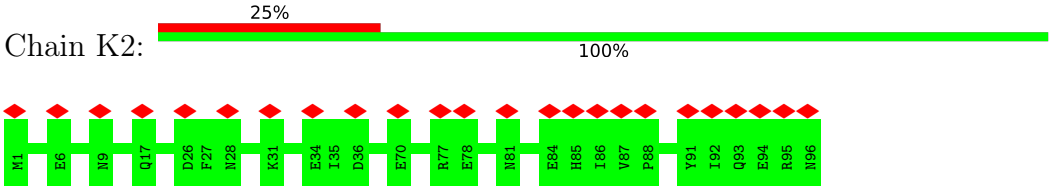
• Molecule 17: 40S ribosomal protein S9-A

Chain J2:



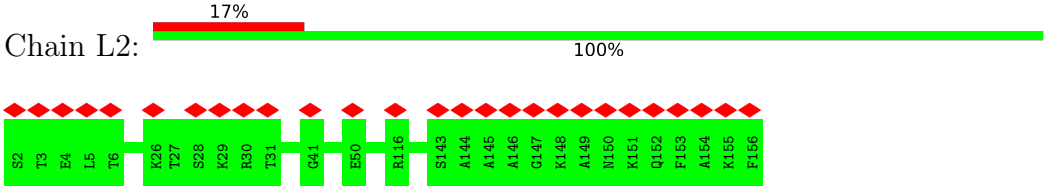
• Molecule 18: 40S ribosomal protein S10-A

Chain K2:



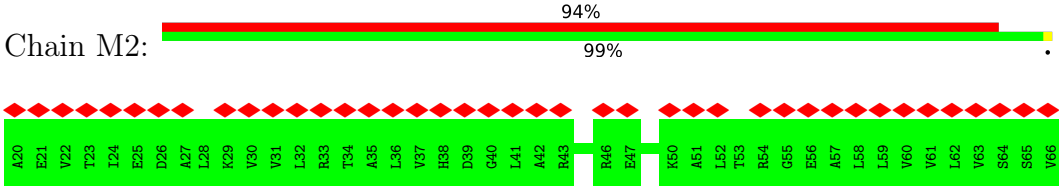
• Molecule 19: 40S ribosomal protein S11-A

Chain L2:



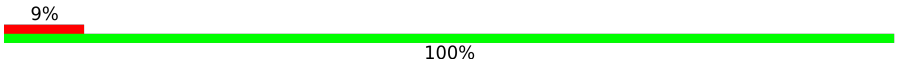
• Molecule 20: 40S ribosomal protein S12

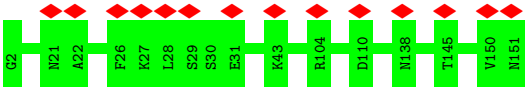
Chain M2:



• Molecule 21: 40S ribosomal protein S13

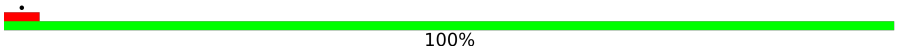
Chain N2:





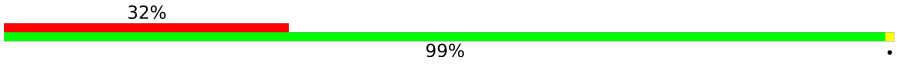
• Molecule 22: 40S ribosomal protein S14-A

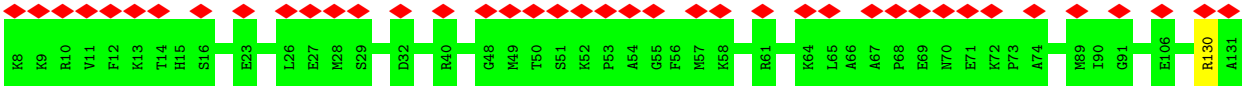
Chain O2:



• Molecule 23: 40S ribosomal protein S15

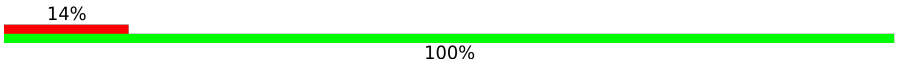
Chain P2:

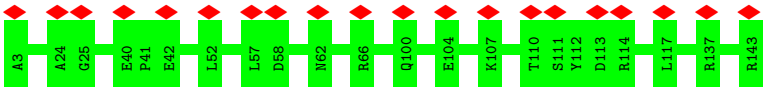




• Molecule 24: 40S ribosomal protein S16-A

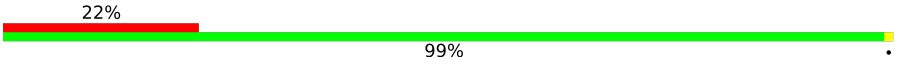
Chain Q2:

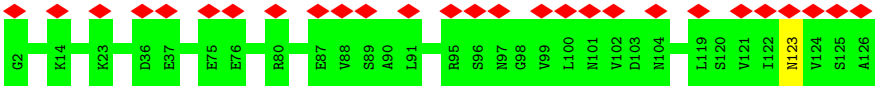




• Molecule 25: 40S ribosomal protein S17-B

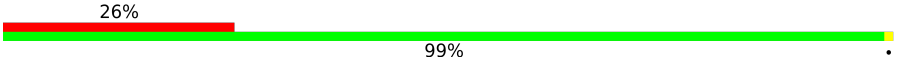
Chain R2:

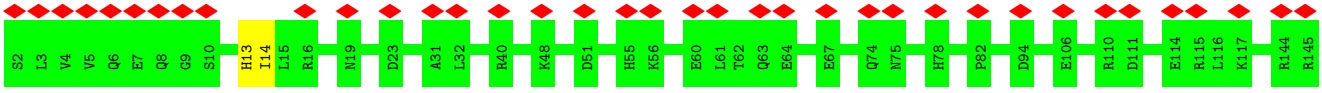




• Molecule 26: 40S ribosomal protein S18-A

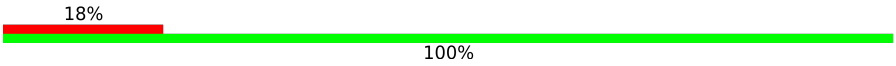
Chain S2:

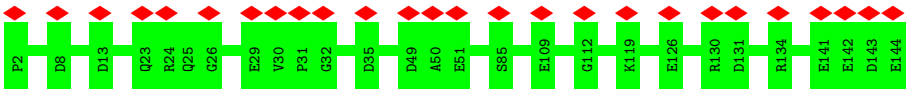




• Molecule 27: 40S ribosomal protein S19-A

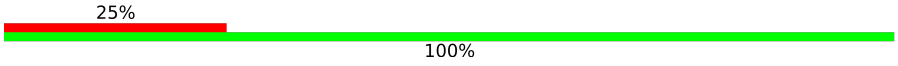
Chain T2:

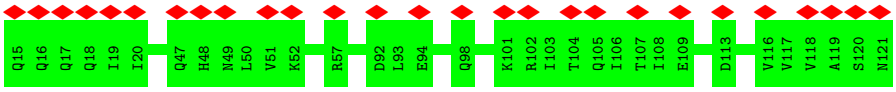




• Molecule 28: 40S ribosomal protein S20

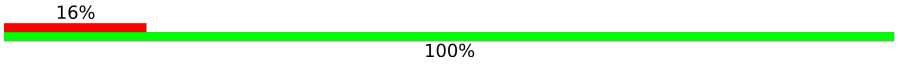
Chain U2:

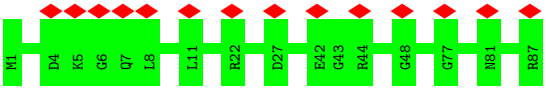




• Molecule 29: 40S ribosomal protein S21-A

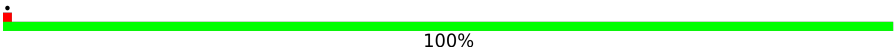
Chain V2:

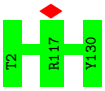




• Molecule 30: 40S ribosomal protein S22-A

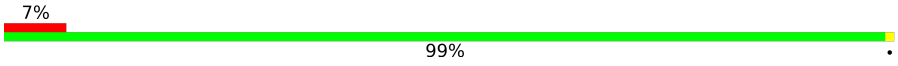
Chain W2:

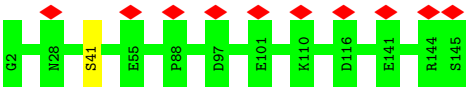




• Molecule 31: 40S ribosomal protein S23-A

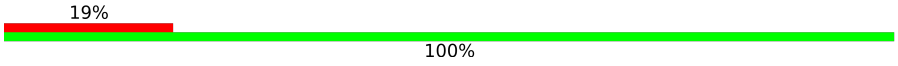
Chain X2:

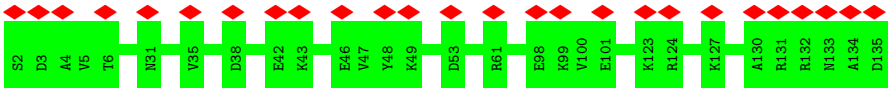




• Molecule 32: 40S ribosomal protein S24-A

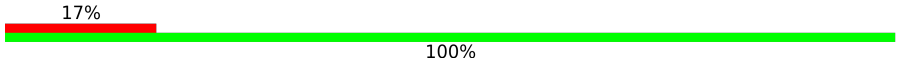
Chain Y2:

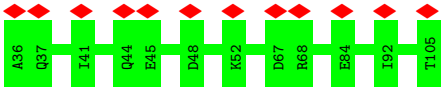




• Molecule 33: 40S ribosomal protein S25-A

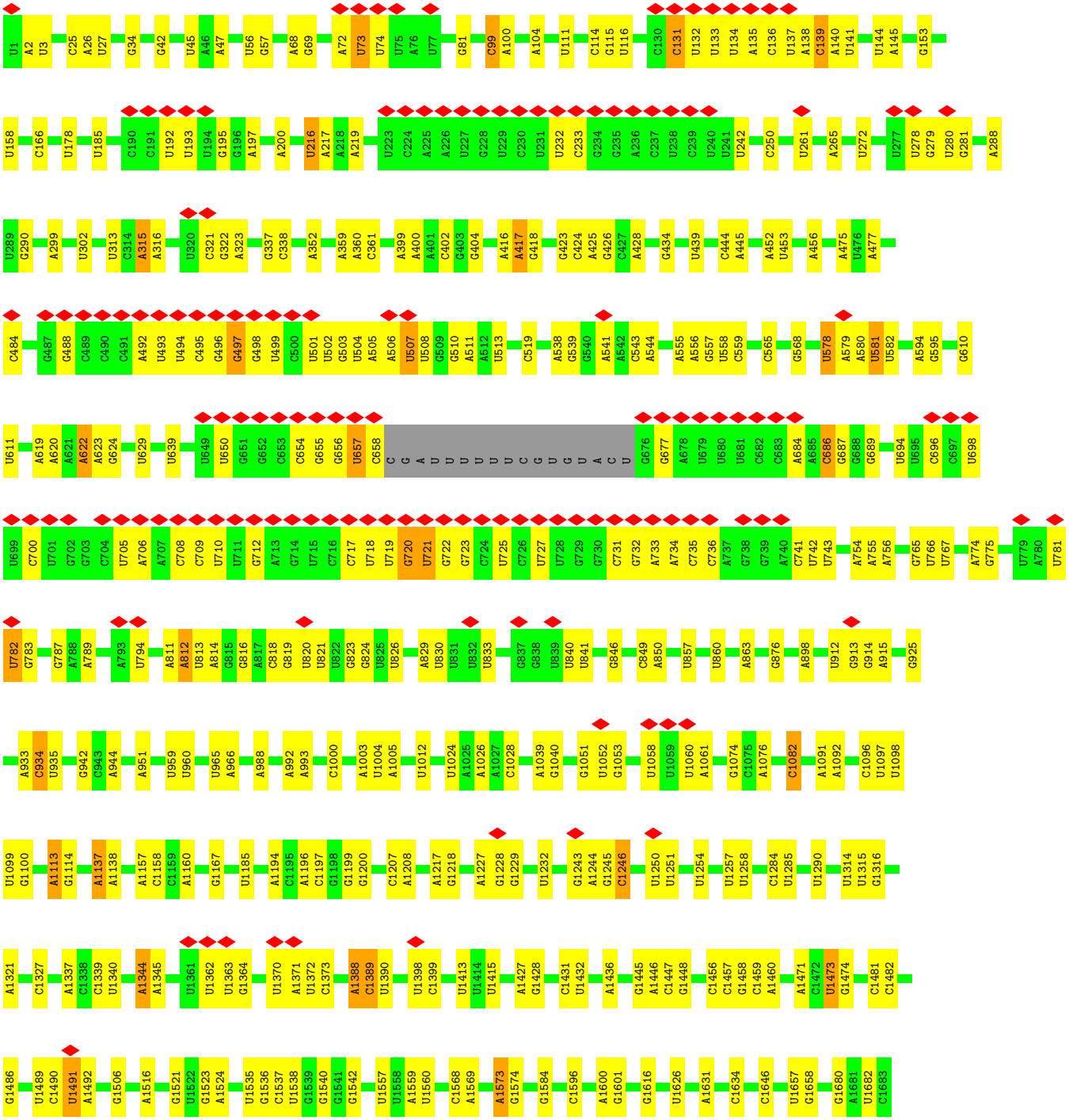
Chain Z2:

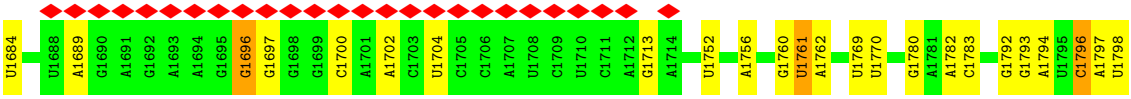




• Molecule 34: 18S ribosomal RNA

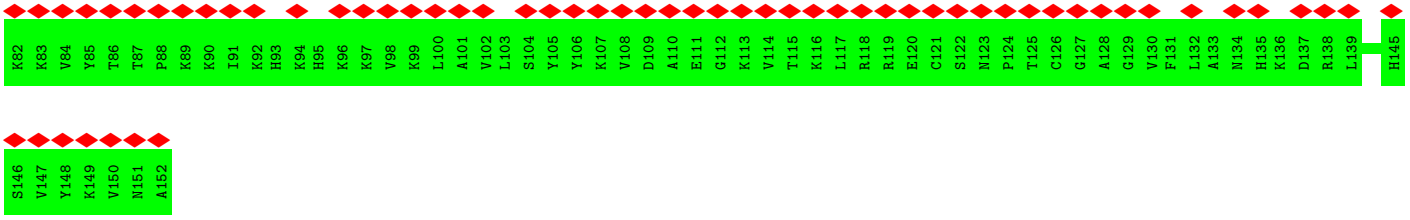
Chain 22:





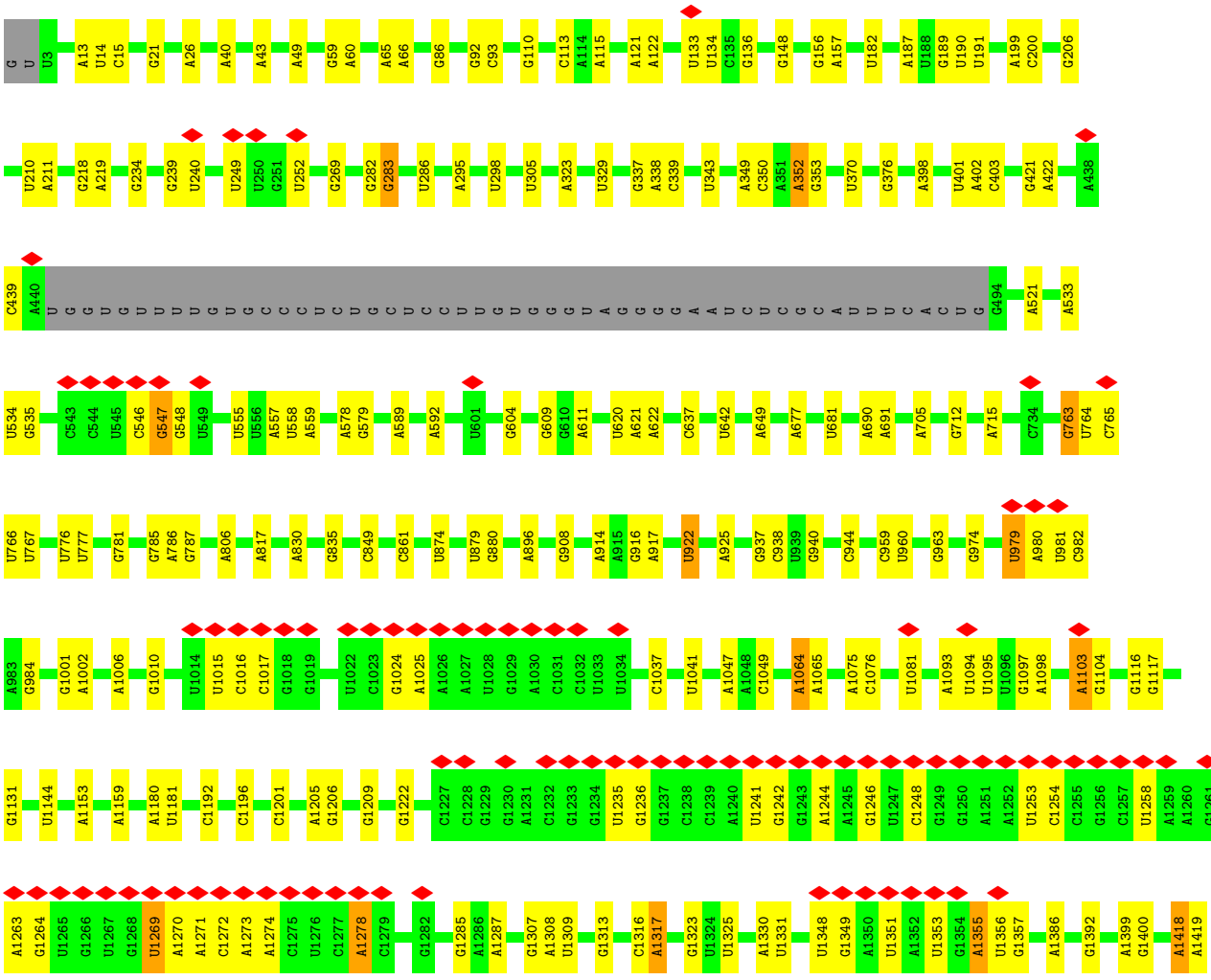
• Molecule 35: Ubiquitin-40S ribosomal protein S31

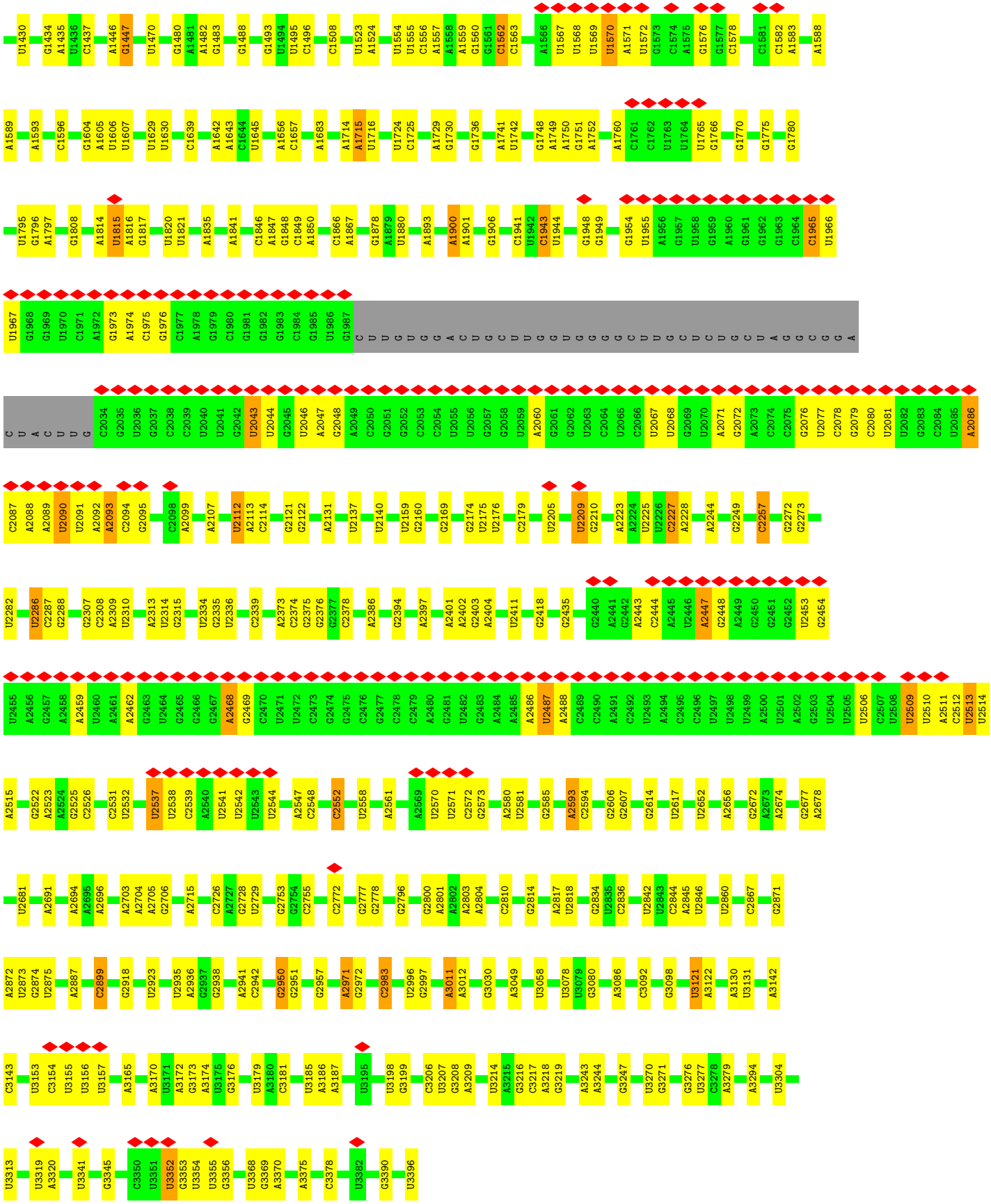
Chain f2:



• Molecule 36: 25S ribosomal RNA

Chain 14:




U1430 G1434 A1435 U1436 C1437 A1446 G1447 U1470 G1480 A1481 A1482 G1483 G1488 G1493 U1494 U1495 C1496 C1508 U1523 A1524 U1554 U1555 C1556 A1557 A1558 A1559 G1560 G1561 C1562 C1563 A1566 U1567 U1568 U1569 U1570 A1571 U1572 G1573 C1574 A1575 G1576 G1577 C1578 C1581 C1582 A1583 A1588
A1589 A1593 C1596 G1604 A1605 U1606 U1607 U1629 U1630 C1639 A1642 A1643 C1644 U1645 A1656 C1657 A1683 A1714 A1715 U1716 U1724 C1725 A1729 G1730 G1736 A1741 U1742 G1748 A1749 A1750 G1751 A1752 A1760 C1761 C1762 U1763 U1764 U1765 G1766 G1770 G1775 G1780
U1795 G1796 A1797 G1808 A1814 U1815 A1816 G1817 U1820 U1821 A1835 A1841 C1846 A1847 G1848 C1849 A1850 C1866 A1867 G1878 A1879 U1880 A1893 A1900 A1901 G1906 C1941 U1942 C1943 U1944 G1948 G1949 G1954 U1955 A1956 G1957 U1958 G1959 A1960 G1961 G1962 G1963 C1964 C1965 U1966
U1967 G1968 G1969 U1970 C1971 A1972 G1973 A1974 C1975 G1976 C1977 A1978 G1979 C1980 G1981 G1982 G1983 C1984 G1985 U1986 G1987 C U U U G U G G A C U G C U U G G U G U G G G C U U U G C C U A G G C G G A
C U A C U U G C2034 G2035 U2036 G2037 C2038 C2039 U2040 U2041 G2042 U2043 U2044 G2045 U2046 A2047 G2048 A2049 C2050 G2051 G2052 C2053 C2054 U2055 U2056 G2057 G2058 U2059 A2060 G2061 G2062 U2063 C2064 U2065 C2066 U2067 U2068 G2069 U2070 A2071 G2072 A2073 C2074 C2075 G2076 U2077 C2078 G2079 C2080 U2081 U2082 G2083 C2084 U2085 A2086
C2087 A2088 A2089 U2090 U2091 A2092 A2093 C2094 G2095 C2098 A2099 A2107 U2112 A2113 C2114 G2121 G2122 A2131 U2137 U2140 U2159 G2160 G2169 G2174 U2175 U2176 C2179 U2205 U2209 G2210 A2223 A2224 U2225 U2226 C2227 A2228 A2244 G2249 C2257 G2272 G2273
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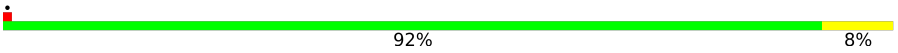
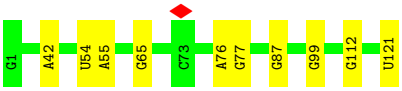
U2455 A2456 G2457 A2458 A2459 U2460 A2461 A2462 G2463 U2464 G2465 G2466 G2467 A2468 G2469 C2470 U2471 U2472 C2473 G2474 G2475 C2476 G2477 C2478 C2479 A2480 G2481 U2482 G2483 A2484 A2485 A2486 U2487 A2488 C2489 C2490 A2491 C2492 U2493 A2494 C2495 C2496 U2497 U2498 U2499 A2500 U2501 A2502 G2503 U2504 U2505 U2506 C2507 U2508 U2509 U2510 A2511 C2512 U2513 U2514
A2515 G2522 A2523 A2524 G2525 C2526 C2531 U2532 U2537 U2538 C2539 A2540 U2541 U2542 U2543 U2544 A2547 C2548 C2552 U2558 A2561 A2569 U2570 U2571 C2572 G2573 A2580 U2581 G2585 A2593 C2594 G2606 G2607 G2614 U2617 U2652 A2656 G2672 A2673 A2674 G2677 A2678
U2681 A2691 A2694 A2695 A2696 A2703 A2704 A2705 G2706 A2715 C2726 A2727 G2728 U2729 G2753 G2754 C2755 C2772 G2777 G2778 G2796 G2800 A2801 A2802 A2803 A2804 C2810 G2814 A2817 U2818 G2834 U2835 C2836 U2842 U2843 C2844 A2845 U2846 U2860 C2867 G2871
A2872 U2873 G2874 U2875 A2887 C2899 G2918 U2923 U2935 A2936 G2937 G2938 A2941 C2942 G2950 G2951 G2957 A2971 G2972 C2983 U2996 G2997 A3011 A3012 G3030 A3049 U3058 U3078 U3079 G3080 A3086 C3092 G3098 U3121 A3122 A3130 U3131 A3142
C3143 U3153 C3154 U3155 U3156 U3157 A3165 A3170 U3171 A3172 G3173 A3174 U3175 G3176 U3179 A3180 C3181 U3185 A3186 A3187 U3195 U3198 G3199 C3206 U3207 G3208 A3209 U3214 A3215 G3216 C3217 A3218 G3219 A3243 A3244 G3247 U3270 G3271 G3276 U3277 C3278 A3279 A3294 U3304
U3313 U3319 A3320 U3341 G3345 C3350 U3351 U3352 G3353 U3354 U3355 G3356 U3368 G3369 A3370 A3375 C3378 U3382 G3390 U3396

• Molecule 37: 5S ribosomal RNA

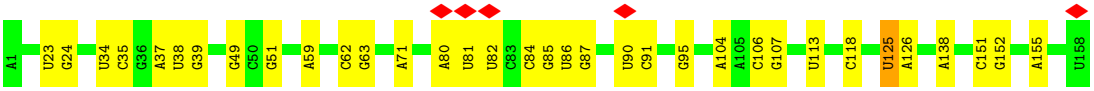
Chain 34:





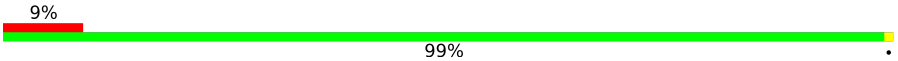
• Molecule 38: 5.8S ribosomal RNA

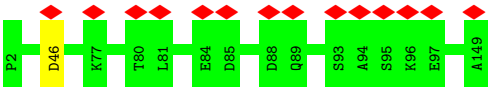
Chain 44:



• Molecule 39: 60S ribosomal protein L28

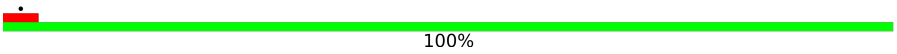
Chain a5:

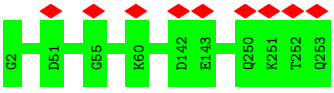




• Molecule 40: 60S ribosomal protein L2-A

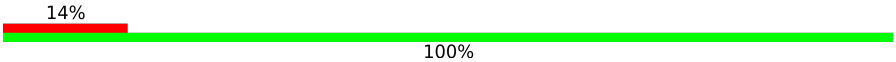
Chain A5:

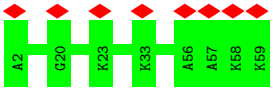




• Molecule 41: 60S ribosomal protein L29

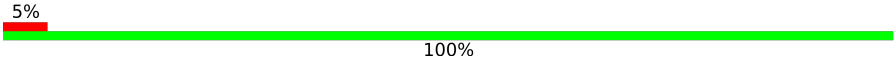
Chain b5:

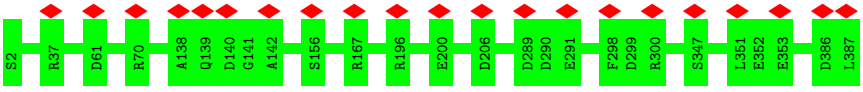




• Molecule 42: 60S ribosomal protein L3

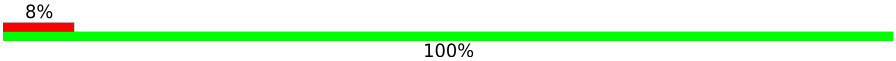
Chain B5:

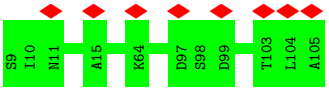




• Molecule 43: 60S ribosomal protein L30

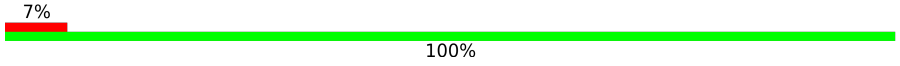
Chain c5:

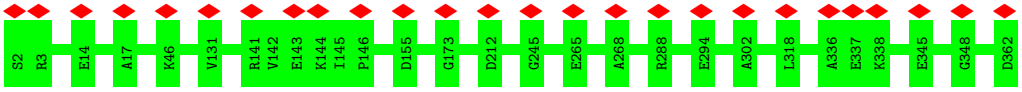




• Molecule 44: 60S ribosomal protein L4-A

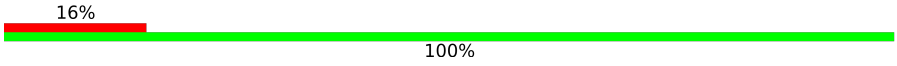
Chain C5:

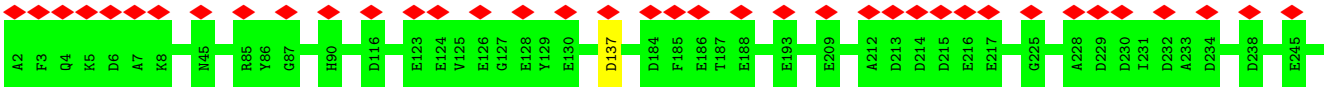


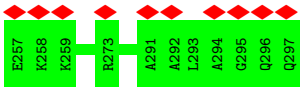


• Molecule 45: 60S ribosomal protein L5

Chain D5:

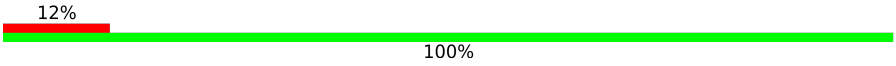


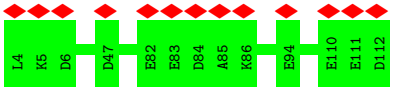




• Molecule 46: 60S ribosomal protein L31-A

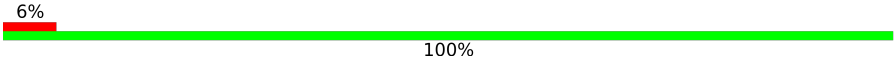
Chain d5:

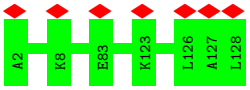




• Molecule 47: 60S ribosomal protein L32

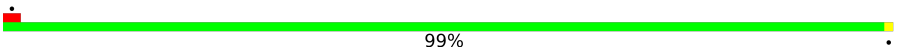
Chain e5:

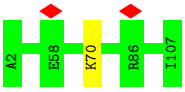




• Molecule 48: 60S ribosomal protein L33-A

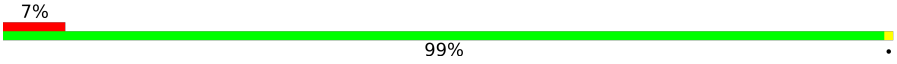
Chain f5:

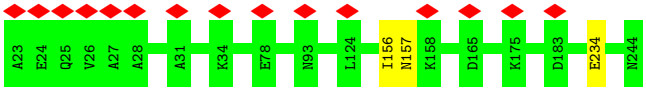




• Molecule 49: 60S ribosomal protein L7-A

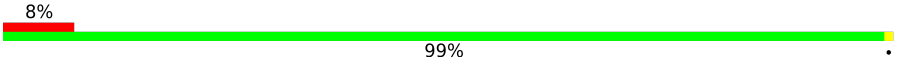
Chain F5:

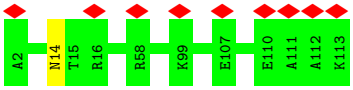




• Molecule 50: 60S ribosomal protein L34-A

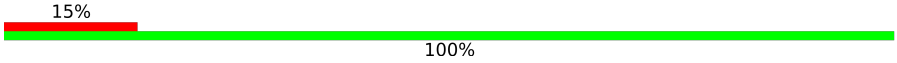
Chain g5:

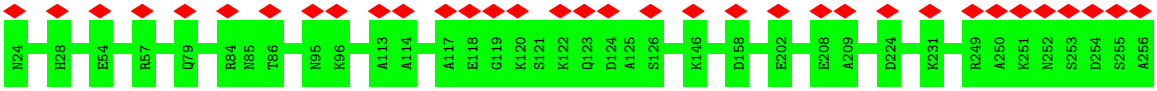




• Molecule 51: 60S ribosomal protein L8-A

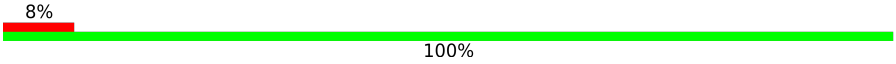
Chain G5:

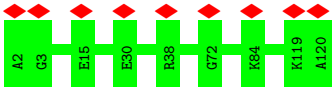




• Molecule 52: 60S ribosomal protein L35-A

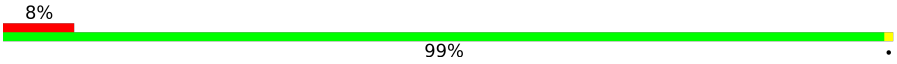
Chain h5:

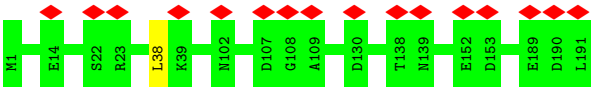




• Molecule 53: 60S ribosomal protein L9-A

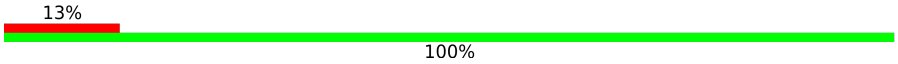
Chain H5:

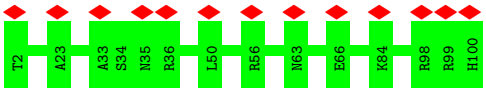




• Molecule 54: 60S ribosomal protein L36-A

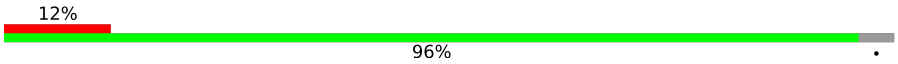
Chain i5:

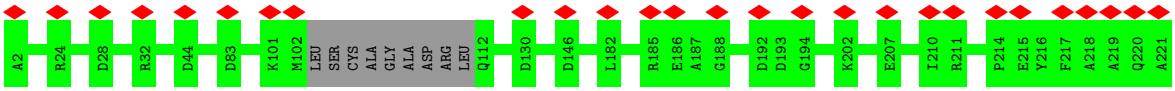




• Molecule 55: 60S ribosomal protein L10

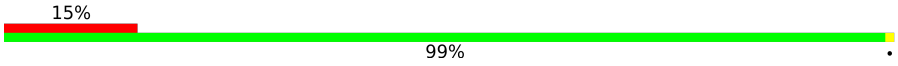
Chain I5:

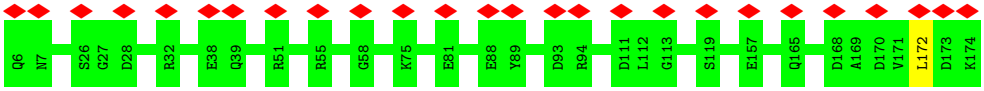




• Molecule 56: 60S ribosomal protein L11-A

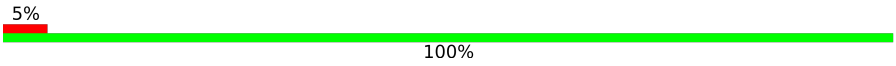
Chain J5:

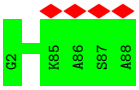




• Molecule 57: 60S ribosomal protein L37-A

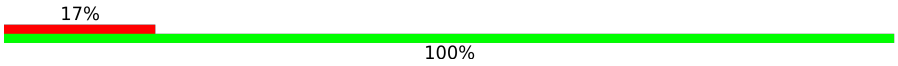
Chain j5:

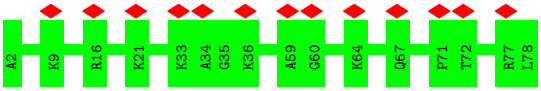




• Molecule 58: 60S ribosomal protein L38

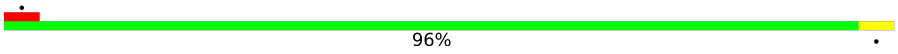
Chain k5:

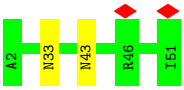




• Molecule 59: 60S ribosomal protein L39

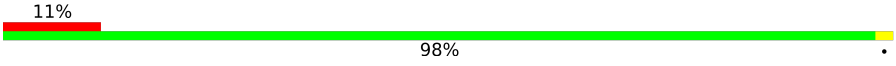
Chain l5:

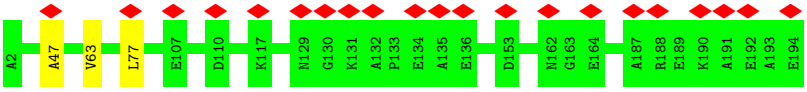




• Molecule 60: 60S ribosomal protein L13-A

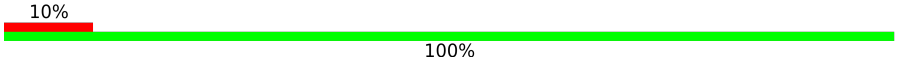
Chain L5:

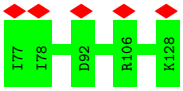




• Molecule 61: Ubiquitin-60S ribosomal protein L40

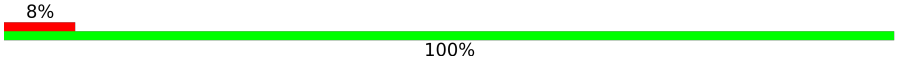
Chain m5:

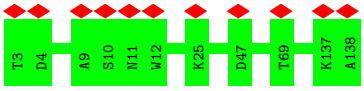




• Molecule 62: 60S ribosomal protein L14-A

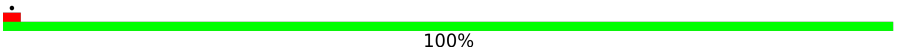
Chain M5:

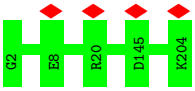




• Molecule 63: 60S ribosomal protein L15-A

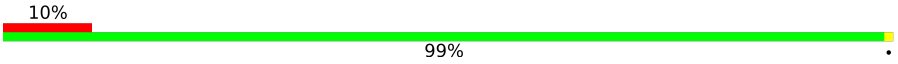
Chain N5:

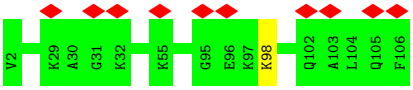




• Molecule 64: 60S ribosomal protein L42-B

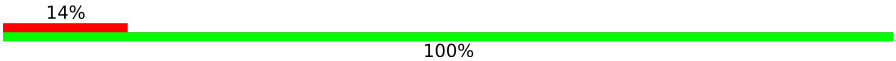
Chain o5:

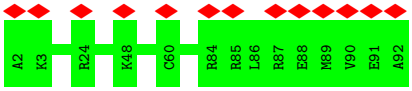




• Molecule 65: 60S ribosomal protein L43-B

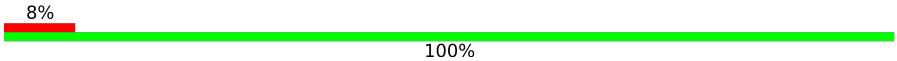
Chain p5:

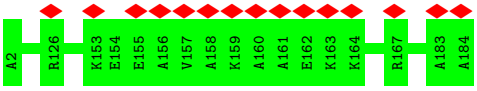




• Molecule 66: 60S ribosomal protein L17-A

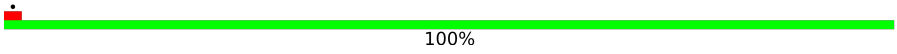
Chain P5:

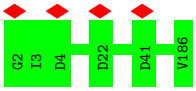




• Molecule 67: 60S ribosomal protein L18-A

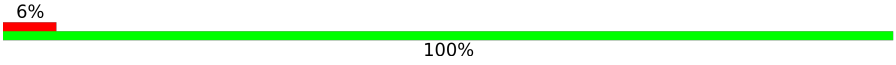
Chain Q5:

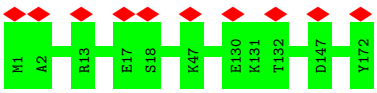




• Molecule 68: 60S ribosomal protein L20-A

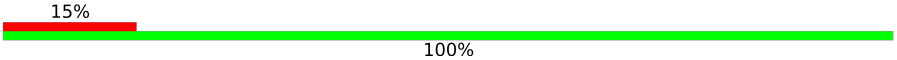
Chain S5:

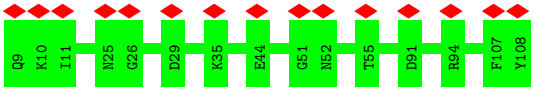




• Molecule 69: 60S ribosomal protein L22-A

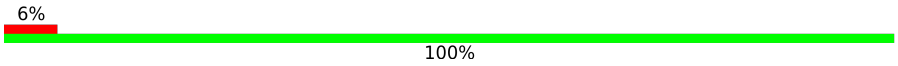
Chain U5:

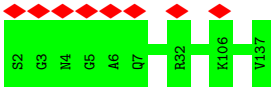




• Molecule 70: 60S ribosomal protein L23-A

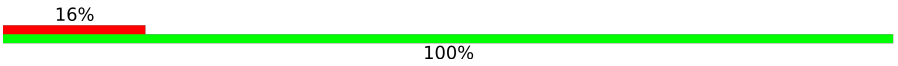
Chain V5:

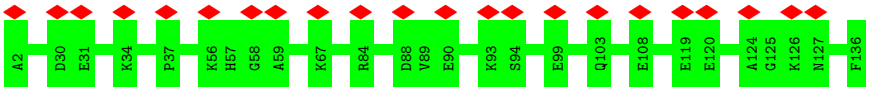




• Molecule 71: 60S ribosomal protein L27-A

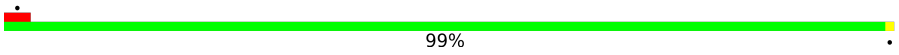
Chain Z5:

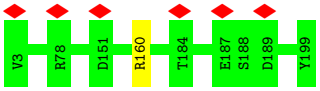




• Molecule 72: 60S ribosomal protein L16-A

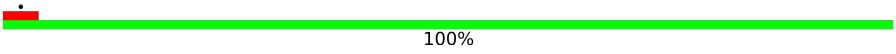
Chain K5:





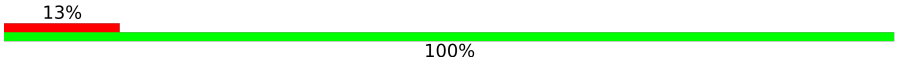
• Molecule 73: 60S ribosomal protein L41-B

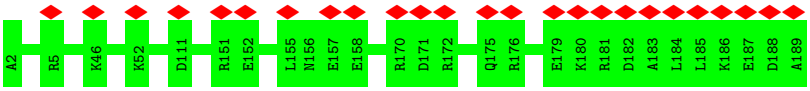
Chain n5:



• Molecule 74: 60S ribosomal protein L19-A

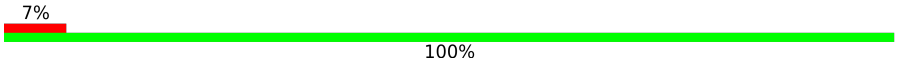
Chain R5:

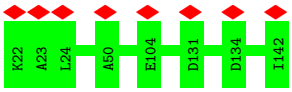




• Molecule 75: 60S ribosomal protein L25

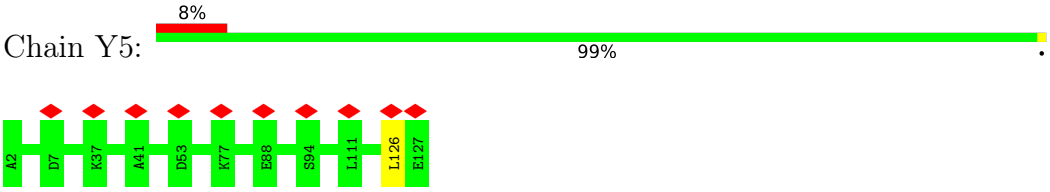
Chain X5:





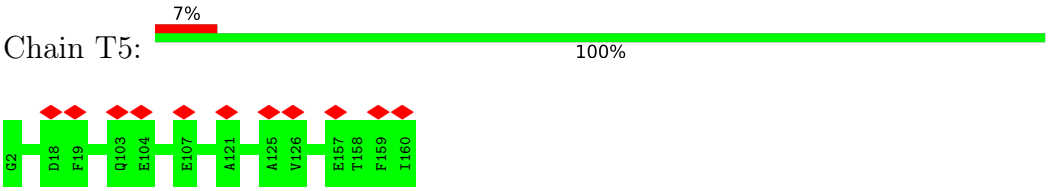
• Molecule 76: 60S ribosomal protein L26-A

Chain Y5:



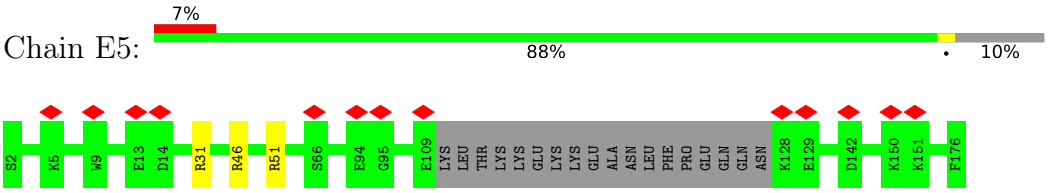
• Molecule 77: 60S ribosomal protein L21-A

Chain T5:



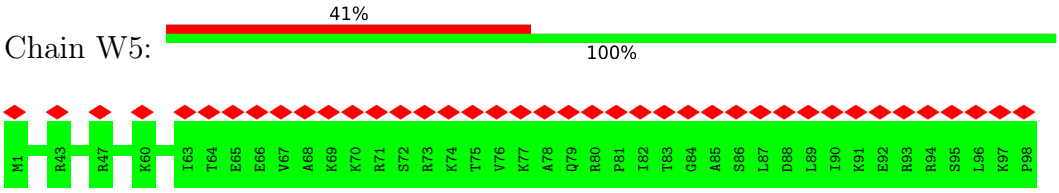
• Molecule 78: 60S ribosomal protein L6-A

Chain E5:



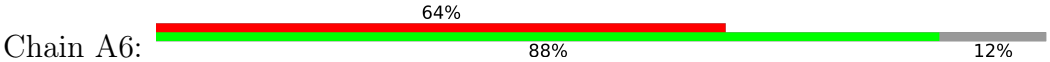
• Molecule 79: 60S ribosomal protein L24-A

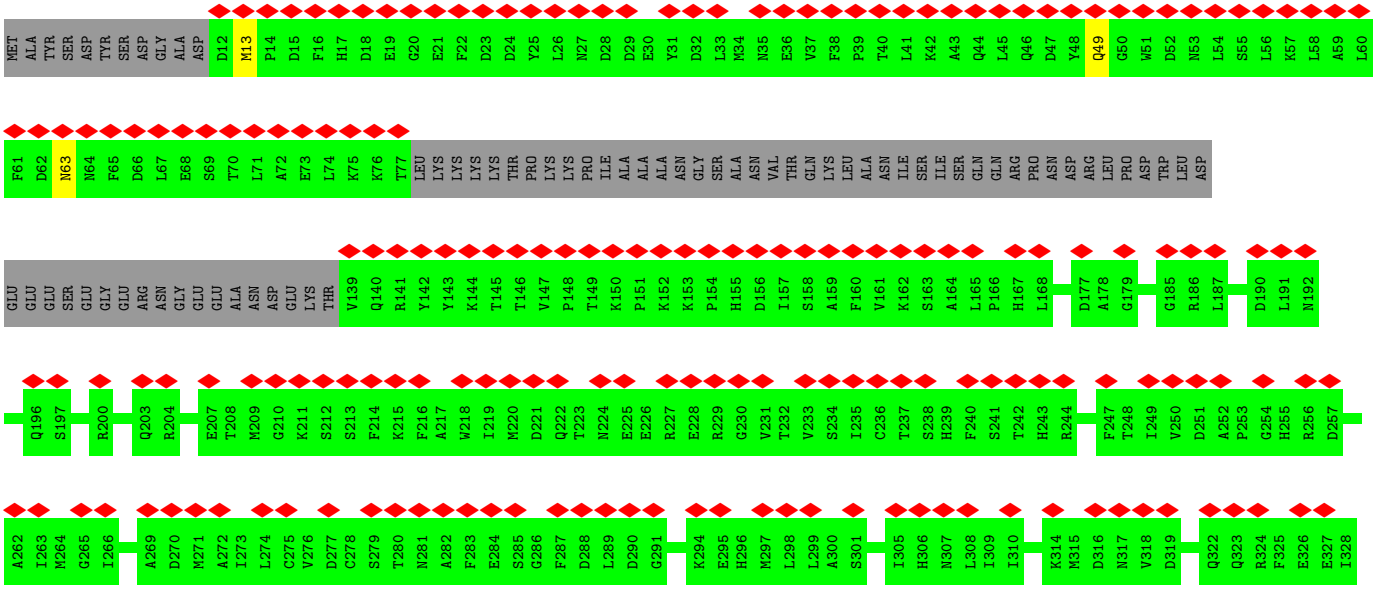
Chain W5:



• Molecule 80: Protein HBS1

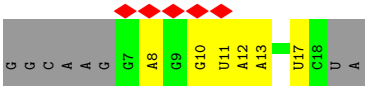
Chain A6:





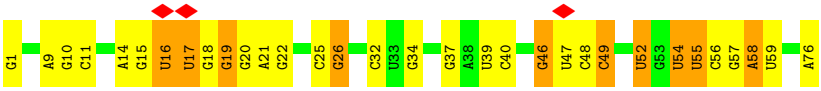
• Molecule 81: nonstop mRNA

Chain X7:



• Molecule 82: yeast Phe-tRNA-Phe

Chain A3:



4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	73391	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI POLARA 300	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	25.0	Depositor
Minimum defocus (nm)	500	Depositor
Maximum defocus (nm)	4500	Depositor
Magnification	80645	Depositor
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	21.317	Depositor
Minimum map value	-12.022	Depositor
Average map value	0.000	Depositor
Map value standard deviation	1.000	Depositor
Recommended contour level	3.5	Depositor
Map size (Å)	409.528, 409.528, 409.528	wwPDB
Map dimensions	412, 412, 412	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.994, 0.994, 0.994	Depositor

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: M2G, 2MG, YYG, 1MA, 5MC, PSU, GNP, MG, 7MG, ZN, OMC, OMG, 5MU, H2U, 5CR

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#$\|Z\|$ >5	RMSZ	#$\|Z\|$ >5
1	A1	0.25	0/3110	0.51	0/4179
2	A2	0.26	0/1662	0.51	0/2273
3	a2	0.24	0/791	0.51	0/1059
4	B2	0.26	0/1735	0.55	0/2335
5	b2	0.25	0/620	0.53	0/838
6	C2	0.26	0/1665	0.50	0/2263
7	c2	0.25	0/499	0.44	0/670
8	D2	0.27	0/1759	0.51	1/2368 (0.0%)
9	d2	0.27	0/453	0.50	0/602
10	E2	0.26	0/2109	0.53	0/2839
11	e2	0.24	0/483	0.47	0/643
12	F2	0.24	0/1629	0.50	0/2202
13	G2	0.25	0/1844	0.51	0/2464
14	g2	0.25	0/2498	0.50	0/3398
15	H2	0.27	0/1506	0.52	0/2028
16	I2	0.26	0/1514	0.52	0/2021
17	J2	0.26	0/1519	0.51	1/2035 (0.0%)
18	K2	0.25	0/837	0.51	0/1131
19	L2	0.27	0/1272	0.50	0/1712
20	M2	0.26	0/942	0.65	0/1274
21	N2	0.25	0/1215	0.50	0/1638
22	O2	0.26	0/952	0.54	0/1279
23	P2	0.31	0/1012	0.53	0/1356
24	Q2	0.25	0/1125	0.52	0/1510
25	R2	0.24	0/1010	0.53	0/1355
26	S2	0.26	0/1211	0.55	0/1628
27	T2	0.25	0/1130	0.50	0/1517
28	U2	0.25	0/865	0.49	0/1169
29	V2	0.25	0/693	0.54	0/935
30	W2	0.25	0/1038	0.53	0/1395
31	X2	0.26	0/1139	0.53	0/1518
32	Y2	0.25	0/1087	0.46	0/1449

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
33	Z2	0.24	0/571	0.51	0/768
34	22	0.21	0/42444	0.85	83/66138 (0.1%)
35	f2	0.25	0/504	0.51	0/682
36	14	0.21	0/78885	0.82	76/122992 (0.1%)
37	34	0.18	0/2883	0.79	0/4491
38	44	0.19	0/3746	0.82	1/5832 (0.0%)
39	a5	0.24	0/1204	0.50	0/1612
40	A5	0.26	0/1952	0.52	0/2622
41	b5	0.25	0/473	0.44	0/629
42	B5	0.25	0/3152	0.49	0/4239
43	c5	0.25	0/751	0.46	0/1008
44	C5	0.26	0/2801	0.53	0/3792
45	D5	0.25	0/2425	0.50	1/3271 (0.0%)
46	d5	0.26	0/904	0.48	0/1213
47	e5	0.24	0/1041	0.47	0/1394
48	f5	0.26	0/868	0.46	0/1168
49	F5	0.26	0/1821	0.49	0/2451
50	g5	0.25	0/891	0.50	0/1191
51	G5	0.26	0/1849	0.52	0/2495
52	h5	0.24	0/978	0.49	0/1301
53	H5	0.26	0/1539	0.51	1/2073 (0.0%)
54	i5	0.25	0/778	0.50	0/1034
55	I5	0.25	0/1753	0.47	0/2350
56	J5	0.25	0/1374	0.55	1/1842 (0.1%)
57	j5	0.26	0/696	0.50	0/923
58	k5	0.25	0/618	0.51	0/826
59	l5	0.24	0/443	0.49	0/588
60	L5	0.26	0/1568	0.52	0/2106
61	m5	0.25	0/423	0.50	0/562
62	M5	0.24	0/1068	0.48	0/1438
63	N5	0.24	0/1757	0.46	0/2354
64	o5	0.25	0/860	0.49	0/1136
65	p5	0.24	0/701	0.47	0/934
66	P5	0.26	0/1465	0.52	0/1968
67	Q5	0.25	0/1465	0.50	0/1965
68	S5	0.26	0/1481	0.47	0/1990
69	U5	0.28	0/812	0.51	0/1099
70	V5	0.26	0/1018	0.48	0/1369
71	Z5	0.26	0/1118	0.48	0/1497
72	K5	0.26	0/1585	0.45	0/2128
73	n5	0.20	0/234	0.45	0/300
74	R5	0.23	0/1538	0.46	0/2050
75	X5	0.26	0/983	0.50	0/1325

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
76	Y5	0.24	0/1004	0.51	1/1341 (0.1%)
77	T5	0.25	0/1300	0.47	0/1743
78	E5	0.26	0/1269	0.46	0/1705
79	W5	0.28	0/814	0.54	0/1081
80	A6	0.26	0/4364	0.51	0/5898
81	X7	0.66	0/290	1.00	0/450
82	A3	0.85	1/1487 (0.1%)	1.13	7/2315 (0.3%)
All	All	0.24	1/226872 (0.0%)	0.73	173/332762 (0.1%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand.A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
12	F2	0	1
17	J2	0	2
20	M2	0	1
26	S2	0	1
31	X2	0	1
49	F5	0	1
60	L5	0	1
All	All	0	8

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
82	A3	1	G	OP3-P	-11.07	1.47	1.61

All (173) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
34	22	1389	C	N1-C2-O2	15.99	128.50	118.90
34	22	1389	C	N3-C2-O2	-13.77	112.26	121.90
34	22	1389	C	C2-N1-C1'	12.13	132.14	118.80
34	22	1389	C	C6-N1-C2	-9.87	116.35	120.30
36	14	922	U	C2-N1-C1'	9.16	128.69	117.70
36	14	922	U	N1-C2-O2	8.15	128.51	122.80
34	22	965	U	C2-N1-C1'	8.03	127.33	117.70
34	22	767	U	N1-C2-O2	7.97	128.38	122.80
34	22	1389	C	C6-N1-C1'	-7.81	111.43	120.80
34	22	767	U	C2-N1-C1'	7.79	127.05	117.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
34	22	767	U	N3-C2-O2	-7.65	116.85	122.20
34	22	965	U	N1-C2-O2	7.44	128.01	122.80
82	A3	19	G	P-O3'-C3'	7.41	128.59	119.70
34	22	1560	U	C2-N1-C1'	7.28	126.43	117.70
82	A3	19	G	C4-N9-C1'	-7.28	117.04	126.50
36	14	922	U	N3-C2-O2	-7.26	117.12	122.20
36	14	3277	U	C2-N1-C1'	7.26	126.41	117.70
34	22	1560	U	N3-C2-O2	-7.23	117.14	122.20
34	22	1560	U	N1-C2-O2	7.21	127.85	122.80
36	14	979	U	P-O3'-C3'	7.13	128.25	119.70
76	Y5	126	LEU	CA-CB-CG	7.13	131.70	115.30
34	22	1246	C	N1-C2-O2	7.12	123.17	118.90
36	14	1715	A	P-O3'-C3'	7.11	128.23	119.70
36	14	2468	A	P-O3'-C3'	7.05	128.16	119.70
34	22	578	U	P-O3'-C3'	7.02	128.12	119.70
34	22	686	C	P-O3'-C3'	7.00	128.11	119.70
34	22	965	U	N3-C2-O2	-6.99	117.31	122.20
36	14	1815	U	P-O3'-C3'	6.98	128.08	119.70
34	22	1761	U	P-O3'-C3'	6.95	128.04	119.70
36	14	2112	U	OP2-P-O3'	6.95	120.49	105.20
36	14	3277	U	N1-C2-O2	6.95	127.66	122.80
34	22	1246	C	C2-N1-C1'	6.90	126.39	118.80
36	14	2447	A	P-O3'-C3'	6.89	127.97	119.70
34	22	139	C	P-O3'-C3'	6.87	127.94	119.70
34	22	497	G	P-O3'-C3'	6.87	127.94	119.70
36	14	2093	A	P-O3'-C3'	6.81	127.87	119.70
34	22	610	G	C4-N9-C1'	6.79	135.32	126.50
34	22	934	C	C2-N1-C1'	6.77	126.25	118.80
82	A3	19	G	C8-N9-C1'	6.76	135.78	127.00
36	14	2112	U	P-O3'-C3'	6.73	127.77	119.70
34	22	1473	U	N1-C2-O2	6.71	127.50	122.80
34	22	1257	U	C2-N1-C1'	6.63	125.66	117.70
34	22	812	A	P-O3'-C3'	6.55	127.56	119.70
34	22	73	U	P-O3'-C3'	6.54	127.55	119.70
34	22	1573	A	OP2-P-O3'	6.47	119.44	105.20
36	14	2487	U	P-O3'-C3'	6.46	127.46	119.70
34	22	1573	A	P-O3'-C3'	6.46	127.45	119.70
34	22	720	G	P-O3'-C3'	6.45	127.44	119.70
34	22	1458	G	C4-N9-C1'	6.44	134.87	126.50
36	14	3277	U	N3-C2-O2	-6.44	117.69	122.20
36	14	2257	C	N1-C2-O2	6.39	122.73	118.90
34	22	657	U	P-O3'-C3'	6.35	127.32	119.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
34	22	315	A	P-O3'-C3'	6.35	127.32	119.70
36	14	547	G	P-O3'-C3'	6.35	127.32	119.70
36	14	2537	U	P-O3'-C3'	6.34	127.31	119.70
36	14	2950	G	P-O3'-C3'	6.34	127.31	119.70
36	14	3058	U	C2-N1-C1'	6.33	125.30	117.70
34	22	934	C	N1-C2-O2	6.32	122.69	118.90
36	14	1103	A	P-O3'-C3'	6.30	127.26	119.70
36	14	2086	A	P-O3'-C3'	6.29	127.25	119.70
34	22	1000	C	C2-N1-C1'	6.29	125.72	118.80
34	22	622	A	P-O3'-C3'	6.27	127.22	119.70
34	22	1456	C	C2-N1-C1'	6.27	125.69	118.80
36	14	2257	C	C2-N1-C1'	6.21	125.64	118.80
36	14	2513	U	P-O3'-C3'	6.21	127.16	119.70
36	14	2090	U	P-O3'-C3'	6.21	127.15	119.70
34	22	1491	U	P-O3'-C3'	6.18	127.11	119.70
36	14	1064	A	P-O3'-C3'	6.13	127.06	119.70
36	14	3352	U	N1-C2-O2	6.13	127.09	122.80
34	22	99	C	P-O3'-C3'	6.12	127.04	119.70
36	14	2286	U	P-O3'-C3'	6.12	127.04	119.70
34	22	1473	U	N3-C2-O2	-6.11	117.93	122.20
36	14	1900	A	P-O3'-C3'	6.09	127.01	119.70
34	22	1473	U	C2-N1-C1'	6.05	124.96	117.70
36	14	3011	A	P-O3'-C3'	6.00	126.90	119.70
36	14	283	G	N3-C4-N9	5.98	129.59	126.00
34	22	1389	C	C5-C6-N1	5.97	123.99	121.00
36	14	922	U	C6-N1-C1'	-5.97	112.83	121.20
34	22	782	U	P-O3'-C3'	5.94	126.83	119.70
34	22	1596	C	C2-N1-C1'	5.93	125.32	118.80
36	14	2447	A	OP1-P-O3'	5.88	118.13	105.20
36	14	2899	C	C2-N1-C1'	5.85	125.23	118.80
36	14	2726	C	C2-N1-C1'	5.84	125.23	118.80
34	22	1113	A	P-O3'-C3'	5.84	126.71	119.70
36	14	2836	C	C2-N1-C1'	5.82	125.20	118.80
34	22	1137	A	P-O3'-C3'	5.81	126.68	119.70
82	A3	52	U	N3-C2-O2	-5.81	118.14	122.20
34	22	657	U	OP1-P-O3'	5.81	117.97	105.20
34	22	1489	U	C2-N1-C1'	5.80	124.67	117.70
36	14	2209	U	P-O3'-C3'	5.80	126.66	119.70
34	22	1246	C	N3-C2-O2	-5.79	117.85	121.90
34	22	721	U	P-O3'-C3'	5.78	126.63	119.70
36	14	1317	A	O4'-C1'-N9	5.75	112.80	108.20
34	22	610	G	C8-N9-C1'	-5.74	119.54	127.00

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
36	14	1795	U	N1-C1'-C2'	5.74	121.46	114.00
36	14	2971	A	P-O3'-C3'	5.74	126.58	119.70
34	22	581	U	C2-N1-C1'	5.69	124.53	117.70
53	H5	38	LEU	CA-CB-CG	5.69	128.38	115.30
36	14	2593	A	P-O3'-C3'	5.69	126.52	119.70
34	22	1082	C	C2-N1-C1'	5.68	125.04	118.80
36	14	922	U	C5-C6-N1	5.67	125.53	122.70
34	22	1456	C	N1-C2-O2	5.67	122.30	118.90
36	14	2983	C	C2-N1-C1'	5.66	125.03	118.80
36	14	283	G	C4-N9-C1'	5.66	133.85	126.50
36	14	2509	U	O4'-C1'-N1	5.62	112.70	108.20
34	22	1752	U	C2-N1-C1'	5.61	124.43	117.70
34	22	610	G	N3-C4-N9	5.60	129.36	126.00
34	22	1257	U	N3-C2-O2	-5.59	118.28	122.20
34	22	543	C	C2-N1-C1'	5.57	124.93	118.80
36	14	283	G	N3-C4-C5	-5.57	125.81	128.60
36	14	2552	C	C2-N1-C1'	5.56	124.91	118.80
34	22	1458	G	C8-N9-C1'	-5.53	119.81	127.00
36	14	352	A	P-O3'-C3'	5.53	126.33	119.70
36	14	2509	U	C2'-C3'-O3'	5.53	122.55	113.70
36	14	2227	C	P-O3'-C3'	5.52	126.32	119.70
34	22	959	U	N1-C2-O2	5.50	126.65	122.80
34	22	959	U	C2-N1-C1'	5.50	124.30	117.70
36	14	1278	A	O4'-C1'-N9	5.49	112.59	108.20
36	14	2552	C	N1-C2-O2	5.49	122.19	118.90
34	22	131	C	P-O3'-C3'	5.49	126.28	119.70
36	14	3058	U	N1-C2-O2	5.49	126.64	122.80
34	22	1696	G	P-O3'-C3'	5.47	126.27	119.70
36	14	2043	U	P-O3'-C3'	5.47	126.27	119.70
34	22	1458	G	N3-C4-N9	5.46	129.28	126.00
36	14	1562	C	P-O3'-C3'	5.45	126.25	119.70
34	22	959	U	N3-C2-O2	-5.42	118.41	122.20
34	22	507	U	C2-N1-C1'	5.39	124.17	117.70
34	22	1344	A	P-O3'-C3'	5.39	126.17	119.70
36	14	1103	A	OP2-P-O3'	5.39	117.05	105.20
36	14	2846	U	C2-N1-C1'	5.38	124.16	117.70
34	22	216	U	P-O3'-C3'	5.37	126.15	119.70
36	14	3214	U	C2-N1-C1'	5.37	124.14	117.70
36	14	1418	A	P-O3'-C3'	5.37	126.14	119.70
34	22	1000	C	N1-C2-O2	5.36	122.12	118.90
34	22	610	G	N3-C4-C5	-5.36	125.92	128.60
36	14	2899	C	N1-C2-O2	5.34	122.11	118.90

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
36	14	3352	U	N3-C2-O2	-5.33	118.47	122.20
38	44	125	U	C2-N1-C1'	5.33	124.09	117.70
45	D5	137	ASP	CB-CG-OD1	5.33	123.09	118.30
34	22	1458	G	N3-C4-C5	-5.32	125.94	128.60
34	22	830	U	C2-N1-C1'	5.31	124.07	117.70
36	14	1570	U	P-O3'-C3'	5.31	126.07	119.70
82	A3	19	G	N1-C6-O6	-5.30	116.72	119.90
34	22	1113	A	OP1-P-O3'	5.29	116.84	105.20
36	14	1965	C	P-O3'-C3'	5.29	126.05	119.70
36	14	2617	U	C2-N1-C1'	5.28	124.04	117.70
82	A3	19	G	N3-C4-N9	-5.28	122.83	126.00
36	14	2772	C	N1-C2-O2	5.28	122.07	118.90
36	14	3121	U	P-O3'-C3'	5.27	126.03	119.70
36	14	1943	C	P-O3'-C3'	5.26	126.02	119.70
34	22	1257	U	N1-C2-O2	5.26	126.48	122.80
8	D2	214	GLU	C-N-CA	5.25	134.82	121.70
36	14	2137	U	C2-N1-C1'	5.24	123.99	117.70
34	22	1796	C	C2-N1-C1'	5.24	124.56	118.80
36	14	2836	C	N1-C2-O2	5.22	122.03	118.90
36	14	3058	U	N3-C2-O2	-5.20	118.56	122.20
56	J5	172	LEU	CA-CB-CG	5.20	127.26	115.30
34	22	1456	C	N3-C2-O2	-5.18	118.28	121.90
34	22	1060	U	C2-N1-C1'	5.17	123.90	117.70
36	14	1355	A	P-O3'-C3'	5.16	125.90	119.70
34	22	1596	C	N1-C2-O2	5.15	121.99	118.90
34	22	497	G	OP1-P-O3'	5.13	116.49	105.20
34	22	1388	A	P-O3'-C3'	5.13	125.86	119.70
36	14	1269	U	C2-N1-C1'	5.13	123.86	117.70
17	J2	93	LEU	CA-CB-CG	5.10	127.04	115.30
34	22	1398	U	C2-N1-C1'	5.09	123.81	117.70
34	22	965	U	C6-N1-C1'	-5.08	114.09	121.20
34	22	417	A	P-O3'-C3'	5.07	125.79	119.70
82	A3	52	U	N1-C2-O2	5.07	126.35	122.80
36	14	1604	G	C4-N9-C1'	5.06	133.08	126.50
36	14	2257	C	N3-C2-O2	-5.05	118.36	121.90
36	14	1447	G	OP2-P-O3'	5.01	116.23	105.20
36	14	763	G	P-O3'-C3'	5.01	125.71	119.70

There are no chirality outliers.

All (8) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
12	F2	126	ASP	Peptide
49	F5	156	ILE	Peptide
17	J2	133	HIS	Peptide
17	J2	163	PRO	Peptide
60	L5	47	ALA	Peptide
20	M2	90	LYS	Peptide
26	S2	13	HIS	Peptide
31	X2	41	SER	Peptide

5.2 Too-close contacts (i)

Due to software issues we are unable to calculate clashes - this section is therefore empty.

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM entries.

The Analysed column shows the number of residues for which the backbone conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A1	379/381 (100%)	352 (93%)	27 (7%)	0	100	100
2	A2	205/207 (99%)	185 (90%)	19 (9%)	1 (0%)	29	61
3	a2	96/98 (98%)	91 (95%)	5 (5%)	0	100	100
4	B2	212/214 (99%)	197 (93%)	15 (7%)	0	100	100
5	b2	79/81 (98%)	74 (94%)	5 (6%)	0	100	100
6	C2	215/217 (99%)	206 (96%)	9 (4%)	0	100	100
7	c2	61/63 (97%)	60 (98%)	1 (2%)	0	100	100
8	D2	221/223 (99%)	210 (95%)	11 (5%)	0	100	100
9	d2	51/53 (96%)	49 (96%)	2 (4%)	0	100	100
10	E2	258/260 (99%)	233 (90%)	25 (10%)	0	100	100
11	e2	58/60 (97%)	55 (95%)	3 (5%)	0	100	100
12	F2	204/206 (99%)	182 (89%)	22 (11%)	0	100	100
13	G2	224/226 (99%)	204 (91%)	18 (8%)	2 (1%)	17	48

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
14	g2	316/318 (99%)	299 (95%)	17 (5%)	0	100	100
15	H2	182/184 (99%)	166 (91%)	16 (9%)	0	100	100
16	I2	184/199 (92%)	163 (89%)	21 (11%)	0	100	100
17	J2	183/185 (99%)	174 (95%)	9 (5%)	0	100	100
18	K2	94/96 (98%)	82 (87%)	12 (13%)	0	100	100
19	L2	153/155 (99%)	140 (92%)	13 (8%)	0	100	100
20	M2	122/124 (98%)	95 (78%)	27 (22%)	0	100	100
21	N2	148/150 (99%)	140 (95%)	8 (5%)	0	100	100
22	O2	125/127 (98%)	114 (91%)	11 (9%)	0	100	100
23	P2	122/124 (98%)	113 (93%)	9 (7%)	0	100	100
24	Q2	139/141 (99%)	131 (94%)	8 (6%)	0	100	100
25	R2	123/125 (98%)	118 (96%)	5 (4%)	0	100	100
26	S2	143/145 (99%)	128 (90%)	14 (10%)	1 (1%)	22	54
27	T2	141/143 (99%)	135 (96%)	6 (4%)	0	100	100
28	U2	105/107 (98%)	99 (94%)	6 (6%)	0	100	100
29	V2	85/87 (98%)	72 (85%)	13 (15%)	0	100	100
30	W2	127/129 (98%)	123 (97%)	4 (3%)	0	100	100
31	X2	142/144 (99%)	131 (92%)	11 (8%)	0	100	100
32	Y2	132/134 (98%)	128 (97%)	4 (3%)	0	100	100
33	Z2	68/70 (97%)	68 (100%)	0	0	100	100
35	f2	69/71 (97%)	56 (81%)	13 (19%)	0	100	100
39	a5	146/148 (99%)	129 (88%)	16 (11%)	1 (1%)	22	54
40	A5	250/252 (99%)	235 (94%)	15 (6%)	0	100	100
41	b5	56/58 (97%)	51 (91%)	5 (9%)	0	100	100
42	B5	384/386 (100%)	368 (96%)	16 (4%)	0	100	100
43	c5	95/97 (98%)	95 (100%)	0	0	100	100
44	C5	359/361 (99%)	330 (92%)	29 (8%)	0	100	100
45	D5	294/296 (99%)	281 (96%)	13 (4%)	0	100	100
46	d5	107/109 (98%)	99 (92%)	8 (8%)	0	100	100
47	e5	125/127 (98%)	118 (94%)	7 (6%)	0	100	100
48	f5	104/106 (98%)	99 (95%)	5 (5%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
49	F5	220/222 (99%)	211 (96%)	7 (3%)	2 (1%)	17 48
50	g5	110/112 (98%)	108 (98%)	2 (2%)	0	100 100
51	G5	231/233 (99%)	219 (95%)	12 (5%)	0	100 100
52	h5	117/119 (98%)	113 (97%)	4 (3%)	0	100 100
53	H5	189/191 (99%)	173 (92%)	16 (8%)	0	100 100
54	i5	97/99 (98%)	89 (92%)	8 (8%)	0	100 100
55	I5	207/220 (94%)	201 (97%)	6 (3%)	0	100 100
56	J5	167/169 (99%)	155 (93%)	12 (7%)	0	100 100
57	j5	85/87 (98%)	81 (95%)	4 (5%)	0	100 100
58	k5	75/77 (97%)	73 (97%)	2 (3%)	0	100 100
59	l5	48/50 (96%)	46 (96%)	2 (4%)	0	100 100
60	L5	191/193 (99%)	174 (91%)	15 (8%)	2 (1%)	15 46
61	m5	50/52 (96%)	49 (98%)	1 (2%)	0	100 100
62	M5	134/136 (98%)	123 (92%)	11 (8%)	0	100 100
63	N5	201/203 (99%)	187 (93%)	14 (7%)	0	100 100
64	o5	103/105 (98%)	98 (95%)	5 (5%)	0	100 100
65	p5	89/91 (98%)	86 (97%)	3 (3%)	0	100 100
66	P5	181/183 (99%)	175 (97%)	6 (3%)	0	100 100
67	Q5	183/185 (99%)	175 (96%)	8 (4%)	0	100 100
68	S5	170/172 (99%)	158 (93%)	12 (7%)	0	100 100
69	U5	98/100 (98%)	95 (97%)	3 (3%)	0	100 100
70	V5	134/136 (98%)	130 (97%)	4 (3%)	0	100 100
71	Z5	133/135 (98%)	123 (92%)	10 (8%)	0	100 100
72	K5	195/197 (99%)	191 (98%)	4 (2%)	0	100 100
73	n5	23/25 (92%)	23 (100%)	0	0	100 100
74	R5	186/188 (99%)	177 (95%)	9 (5%)	0	100 100
75	X5	119/121 (98%)	115 (97%)	4 (3%)	0	100 100
76	Y5	124/126 (98%)	121 (98%)	3 (2%)	0	100 100
77	T5	157/159 (99%)	147 (94%)	10 (6%)	0	100 100
78	E5	153/175 (87%)	144 (94%)	9 (6%)	0	100 100
79	W5	96/98 (98%)	83 (86%)	13 (14%)	0	100 100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
80	A6	535/611 (88%)	496 (93%)	39 (7%)	0	100 100
All	All	11887/12157 (98%)	11117 (94%)	761 (6%)	9 (0%)	54 81

All (9) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
26	S2	14	ILE
13	G2	149	LYS
60	L5	77	LEU
49	F5	234	GLU
39	a5	46	ASP
49	F5	157	ASN
60	L5	63	VAL
13	G2	173	PRO
2	A2	4	PRO

5.3.2 Protein sidechains (i)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM entries.

The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
1	A1	344/344 (100%)	341 (99%)	3 (1%)	78 87
2	A2	174/174 (100%)	174 (100%)	0	100 100
3	a2	84/84 (100%)	83 (99%)	1 (1%)	71 83
4	B2	191/191 (100%)	191 (100%)	0	100 100
5	b2	70/70 (100%)	70 (100%)	0	100 100
6	C2	176/176 (100%)	176 (100%)	0	100 100
7	c2	56/56 (100%)	55 (98%)	1 (2%)	59 78
8	D2	182/182 (100%)	182 (100%)	0	100 100
9	d2	47/47 (100%)	47 (100%)	0	100 100
10	E2	221/221 (100%)	221 (100%)	0	100 100
11	e2	51/51 (100%)	51 (100%)	0	100 100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
12	F2	173/173 (100%)	173 (100%)	0	100	100
13	G2	193/193 (100%)	193 (100%)	0	100	100
14	g2	261/261 (100%)	261 (100%)	0	100	100
15	H2	165/165 (100%)	165 (100%)	0	100	100
16	I2	150/160 (94%)	150 (100%)	0	100	100
17	J2	158/158 (100%)	158 (100%)	0	100	100
18	K2	89/89 (100%)	89 (100%)	0	100	100
19	L2	136/136 (100%)	136 (100%)	0	100	100
20	M2	100/100 (100%)	100 (100%)	0	100	100
21	N2	127/127 (100%)	127 (100%)	0	100	100
22	O2	96/96 (100%)	96 (100%)	0	100	100
23	P2	104/104 (100%)	103 (99%)	1 (1%)	76	86
24	Q2	117/117 (100%)	117 (100%)	0	100	100
25	R2	113/113 (100%)	112 (99%)	1 (1%)	78	87
26	S2	128/128 (100%)	128 (100%)	0	100	100
27	T2	115/115 (100%)	115 (100%)	0	100	100
28	U2	100/100 (100%)	100 (100%)	0	100	100
29	V2	74/74 (100%)	74 (100%)	0	100	100
30	W2	110/110 (100%)	110 (100%)	0	100	100
31	X2	119/119 (100%)	119 (100%)	0	100	100
32	Y2	112/112 (100%)	112 (100%)	0	100	100
33	Z2	61/61 (100%)	61 (100%)	0	100	100
35	f2	43/62 (69%)	43 (100%)	0	100	100
39	a5	118/118 (100%)	118 (100%)	0	100	100
40	A5	194/194 (100%)	194 (100%)	0	100	100
41	b5	46/46 (100%)	46 (100%)	0	100	100
42	B5	322/322 (100%)	322 (100%)	0	100	100
43	c5	81/81 (100%)	81 (100%)	0	100	100
44	C5	288/288 (100%)	288 (100%)	0	100	100
45	D5	244/244 (100%)	244 (100%)	0	100	100
46	d5	96/96 (100%)	96 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
47	e5	109/109 (100%)	109 (100%)	0	100	100
48	f5	90/90 (100%)	89 (99%)	1 (1%)	73	85
49	F5	186/186 (100%)	186 (100%)	0	100	100
50	g5	95/95 (100%)	94 (99%)	1 (1%)	73	85
51	G5	191/191 (100%)	191 (100%)	0	100	100
52	h5	104/104 (100%)	104 (100%)	0	100	100
53	H5	171/171 (100%)	171 (100%)	0	100	100
54	i5	81/81 (100%)	81 (100%)	0	100	100
55	I5	180/186 (97%)	180 (100%)	0	100	100
56	J5	147/147 (100%)	147 (100%)	0	100	100
57	j5	70/70 (100%)	70 (100%)	0	100	100
58	k5	68/68 (100%)	68 (100%)	0	100	100
59	l5	45/45 (100%)	43 (96%)	2 (4%)	28	59
60	L5	154/154 (100%)	154 (100%)	0	100	100
61	m5	47/47 (100%)	47 (100%)	0	100	100
62	M5	107/107 (100%)	107 (100%)	0	100	100
63	N5	175/175 (100%)	175 (100%)	0	100	100
64	o5	90/90 (100%)	89 (99%)	1 (1%)	73	85
65	p5	71/71 (100%)	71 (100%)	0	100	100
66	P5	145/145 (100%)	145 (100%)	0	100	100
67	Q5	150/150 (100%)	150 (100%)	0	100	100
68	S5	156/156 (100%)	156 (100%)	0	100	100
69	U5	87/87 (100%)	87 (100%)	0	100	100
70	V5	104/104 (100%)	104 (100%)	0	100	100
71	Z5	115/115 (100%)	115 (100%)	0	100	100
72	K5	160/160 (100%)	159 (99%)	1 (1%)	86	91
73	n5	23/23 (100%)	23 (100%)	0	100	100
74	R5	153/153 (100%)	153 (100%)	0	100	100
75	X5	105/105 (100%)	105 (100%)	0	100	100
76	Y5	109/109 (100%)	109 (100%)	0	100	100
77	T5	136/136 (100%)	136 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
78	E5	135/152 (89%)	132 (98%)	3 (2%)	52 74
79	W5	86/86 (100%)	86 (100%)	0	100 100
80	A6	478/538 (89%)	475 (99%)	3 (1%)	86 91
All	All	10152/10264 (99%)	10133 (100%)	19 (0%)	93 97

All (19) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A1	12	ASN
1	A1	50	LYS
1	A1	292	ASN
3	a2	11	ASN
7	c2	67	ARG
23	P2	130	ARG
25	R2	123	ASN
48	f5	70	LYS
50	g5	14	ASN
59	l5	33	ASN
59	l5	43	ASN
64	o5	98	LYS
72	K5	160	ARG
78	E5	31	ARG
78	E5	46	ARG
78	E5	51	ARG
80	A6	13	MET
80	A6	49	GLN
80	A6	63	ASN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (83) such sidechains are listed below:

Mol	Chain	Res	Type
1	A1	12	ASN
1	A1	96	ASN
1	A1	153	HIS
1	A1	292	ASN
1	A1	325	HIS
1	A1	345	ASN
2	A2	23	HIS
2	A2	92	HIS
3	a2	11	ASN

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Mol	Chain	Res	Type
4	B2	101	HIS
4	B2	118	GLN
4	B2	149	GLN
6	C2	94	GLN
6	C2	220	ASN
7	c2	27	GLN
9	d2	37	ASN
10	E2	36	HIS
10	E2	98	ASN
12	F2	104	ASN
12	F2	127	GLN
13	G2	65	GLN
13	G2	190	GLN
13	G2	201	GLN
14	g2	174	ASN
14	g2	198	ASN
14	g2	268	GLN
16	I2	9	HIS
16	I2	103	GLN
16	I2	159	GLN
21	N2	5	HIS
24	Q2	62	ASN
25	R2	123	ASN
30	W2	15	ASN
30	W2	16	ASN
30	W2	80	ASN
30	W2	92	ASN
31	X2	18	HIS
31	X2	79	ASN
31	X2	94	ASN
33	Z2	38	HIS
33	Z2	98	GLN
39	a5	40	HIS
39	a5	64	GLN
39	a5	74	ASN
40	A5	209	HIS
41	b5	12	GLN
42	B5	109	HIS
44	C5	114	ASN
45	D5	45	ASN
45	D5	63	GLN
45	D5	244	HIS

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Mol	Chain	Res	Type
47	e5	52	GLN
48	f5	42	GLN
49	F5	166	ASN
50	g5	14	ASN
50	g5	52	GLN
51	G5	138	HIS
51	G5	192	GLN
51	G5	232	HIS
52	h5	59	ASN
53	H5	77	ASN
53	H5	96	HIS
55	I5	14	ASN
56	J5	109	HIS
59	l5	4	GLN
59	l5	33	ASN
59	l5	43	ASN
61	m5	90	ASN
63	N5	37	HIS
63	N5	181	ASN
63	N5	182	ASN
64	o5	82	GLN
68	S5	154	HIS
70	V5	98	ASN
71	Z5	40	HIS
71	Z5	57	HIS
74	R5	134	HIS
78	E5	157	GLN
80	A6	63	ASN
80	A6	239	HIS
80	A6	261	ASN
80	A6	281	ASN
80	A6	345	ASN

5.3.3 RNA (i)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
34	22	1779/1798 (98%)	367 (20%)	42 (2%)
36	14	3292/3396 (96%)	562 (17%)	74 (2%)
37	34	120/121 (99%)	10 (8%)	0
38	44	157/158 (99%)	34 (21%)	0
81	X7	11/20 (55%)	6 (54%)	0

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Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
82	A3	75/76 (98%)	24 (32%)	2 (2%)
All	All	5434/5569 (97%)	1003 (18%)	118 (2%)

All (1003) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
34	22	2	A
34	22	3	U
34	22	25	C
34	22	26	A
34	22	27	U
34	22	34	G
34	22	42	G
34	22	45	U
34	22	47	A
34	22	57	G
34	22	68	A
34	22	69	G
34	22	72	A
34	22	73	U
34	22	74	U
34	22	81	G
34	22	100	A
34	22	104	A
34	22	111	U
34	22	114	C
34	22	115	G
34	22	116	U
34	22	131	C
34	22	132	U
34	22	133	U
34	22	134	U
34	22	135	A
34	22	136	C
34	22	137	U
34	22	138	A
34	22	140	A
34	22	141	U
34	22	144	U
34	22	145	A
34	22	153	G
34	22	158	U

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Mol	Chain	Res	Type
34	22	166	C
34	22	178	U
34	22	185	U
34	22	192	U
34	22	193	U
34	22	195	G
34	22	197	A
34	22	200	A
34	22	217	A
34	22	219	A
34	22	232	U
34	22	233	C
34	22	242	U
34	22	250	C
34	22	261	U
34	22	265	A
34	22	272	U
34	22	278	U
34	22	279	G
34	22	280	U
34	22	281	G
34	22	288	A
34	22	290	G
34	22	299	A
34	22	302	U
34	22	313	U
34	22	316	A
34	22	321	C
34	22	322	G
34	22	323	A
34	22	337	G
34	22	338	C
34	22	352	A
34	22	359	A
34	22	360	A
34	22	361	C
34	22	399	A
34	22	400	A
34	22	402	C
34	22	404	G
34	22	416	A
34	22	417	A

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Mol	Chain	Res	Type
34	22	418	G
34	22	423	G
34	22	424	C
34	22	425	A
34	22	426	G
34	22	428	A
34	22	434	G
34	22	439	U
34	22	445	A
34	22	452	A
34	22	453	U
34	22	456	A
34	22	475	A
34	22	477	A
34	22	484	C
34	22	488	G
34	22	492	A
34	22	493	U
34	22	494	U
34	22	495	C
34	22	496	G
34	22	497	G
34	22	498	G
34	22	499	U
34	22	501	U
34	22	502	U
34	22	504	U
34	22	505	A
34	22	506	A
34	22	507	U
34	22	508	U
34	22	510	G
34	22	511	A
34	22	513	U
34	22	519	C
34	22	539	G
34	22	541	A
34	22	544	A
34	22	555	A
34	22	556	A
34	22	557	G
34	22	558	U

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Mol	Chain	Res	Type
34	22	559	C
34	22	565	C
34	22	568	G
34	22	578	U
34	22	579	A
34	22	581	U
34	22	582	U
34	22	594	A
34	22	595	G
34	22	611	U
34	22	619	A
34	22	620	A
34	22	623	A
34	22	624	G
34	22	629	U
34	22	639	U
34	22	650	U
34	22	654	C
34	22	655	G
34	22	656	G
34	22	658	C
34	22	677	G
34	22	684	A
34	22	686	C
34	22	687	G
34	22	689	G
34	22	694	U
34	22	696	C
34	22	698	U
34	22	700	C
34	22	705	U
34	22	706	A
34	22	708	C
34	22	709	C
34	22	710	U
34	22	712	G
34	22	717	C
34	22	718	U
34	22	719	U
34	22	721	U
34	22	722	G
34	22	723	G

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Mol	Chain	Res	Type
34	22	725	U
34	22	727	U
34	22	731	C
34	22	732	G
34	22	733	A
34	22	734	A
34	22	735	C
34	22	736	C
34	22	741	C
34	22	742	U
34	22	743	U
34	22	754	A
34	22	755	A
34	22	756	A
34	22	765	G
34	22	766	U
34	22	774	A
34	22	775	G
34	22	781	U
34	22	783	G
34	22	787	G
34	22	789	A
34	22	794	U
34	22	811	A
34	22	813	U
34	22	814	A
34	22	816	G
34	22	818	C
34	22	820	U
34	22	821	U
34	22	823	G
34	22	824	G
34	22	826	U
34	22	829	A
34	22	833	U
34	22	840	U
34	22	841	U
34	22	846	G
34	22	849	C
34	22	850	A
34	22	857	U
34	22	860	U

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Mol	Chain	Res	Type
34	22	863	A
34	22	876	G
34	22	898	A
34	22	912	U
34	22	913	G
34	22	914	G
34	22	915	A
34	22	925	G
34	22	933	A
34	22	934	C
34	22	935	U
34	22	942	G
34	22	944	A
34	22	951	A
34	22	960	U
34	22	966	A
34	22	988	A
34	22	992	A
34	22	993	A
34	22	1003	A
34	22	1004	U
34	22	1005	A
34	22	1012	U
34	22	1024	U
34	22	1026	A
34	22	1028	C
34	22	1039	A
34	22	1040	G
34	22	1051	G
34	22	1052	U
34	22	1053	G
34	22	1058	U
34	22	1061	A
34	22	1074	G
34	22	1076	A
34	22	1082	C
34	22	1091	A
34	22	1092	A
34	22	1096	C
34	22	1097	U
34	22	1098	U
34	22	1099	U

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Mol	Chain	Res	Type
34	22	1100	G
34	22	1113	A
34	22	1114	G
34	22	1138	A
34	22	1158	C
34	22	1160	A
34	22	1167	G
34	22	1185	U
34	22	1194	A
34	22	1196	A
34	22	1197	C
34	22	1199	G
34	22	1200	G
34	22	1207	C
34	22	1208	A
34	22	1217	A
34	22	1218	G
34	22	1227	A
34	22	1228	G
34	22	1229	G
34	22	1232	U
34	22	1243	G
34	22	1244	A
34	22	1245	G
34	22	1246	C
34	22	1251	U
34	22	1254	U
34	22	1258	U
34	22	1284	C
34	22	1285	U
34	22	1290	U
34	22	1314	U
34	22	1315	U
34	22	1316	G
34	22	1321	A
34	22	1327	C
34	22	1337	A
34	22	1339	C
34	22	1340	U
34	22	1344	A
34	22	1345	A
34	22	1362	U

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Mol	Chain	Res	Type
34	22	1363	U
34	22	1364	G
34	22	1370	U
34	22	1371	A
34	22	1372	U
34	22	1373	C
34	22	1389	C
34	22	1390	U
34	22	1399	C
34	22	1413	U
34	22	1415	U
34	22	1427	A
34	22	1428	G
34	22	1431	C
34	22	1432	U
34	22	1436	A
34	22	1445	G
34	22	1446	A
34	22	1448	G
34	22	1457	C
34	22	1459	C
34	22	1460	A
34	22	1471	A
34	22	1473	U
34	22	1474	G
34	22	1482	C
34	22	1486	G
34	22	1490	C
34	22	1492	A
34	22	1506	G
34	22	1516	A
34	22	1521	G
34	22	1523	G
34	22	1524	A
34	22	1535	U
34	22	1536	G
34	22	1537	C
34	22	1538	U
34	22	1540	G
34	22	1542	G
34	22	1557	U
34	22	1559	A

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Mol	Chain	Res	Type
34	22	1568	C
34	22	1569	A
34	22	1574	G
34	22	1584	G
34	22	1600	A
34	22	1601	G
34	22	1616	G
34	22	1626	U
34	22	1631	A
34	22	1634	C
34	22	1646	C
34	22	1657	U
34	22	1658	G
34	22	1680	G
34	22	1682	U
34	22	1684	U
34	22	1689	A
34	22	1696	G
34	22	1697	G
34	22	1700	C
34	22	1702	A
34	22	1704	U
34	22	1713	G
34	22	1756	A
34	22	1760	G
34	22	1762	A
34	22	1769	U
34	22	1770	U
34	22	1780	G
34	22	1782	A
34	22	1783	C
34	22	1792	G
34	22	1793	G
34	22	1794	A
34	22	1796	C
34	22	1797	A
34	22	1798	U
36	14	13	A
36	14	14	U
36	14	15	C
36	14	21	G
36	14	26	A

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Mol	Chain	Res	Type
36	14	40	A
36	14	43	A
36	14	49	A
36	14	59	G
36	14	60	A
36	14	65	A
36	14	66	A
36	14	86	G
36	14	92	G
36	14	93	C
36	14	110	G
36	14	113	C
36	14	115	A
36	14	121	A
36	14	122	A
36	14	133	U
36	14	134	U
36	14	136	G
36	14	148	G
36	14	156	G
36	14	157	A
36	14	182	U
36	14	187	A
36	14	189	G
36	14	190	U
36	14	191	U
36	14	200	C
36	14	206	G
36	14	210	U
36	14	211	A
36	14	218	G
36	14	219	A
36	14	234	G
36	14	240	U
36	14	249	U
36	14	252	U
36	14	269	G
36	14	283	G
36	14	286	U
36	14	295	A
36	14	298	U
36	14	305	U

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Mol	Chain	Res	Type
36	14	323	A
36	14	329	U
36	14	338	A
36	14	339	C
36	14	343	U
36	14	349	A
36	14	350	C
36	14	352	A
36	14	353	G
36	14	370	U
36	14	376	G
36	14	398	A
36	14	401	U
36	14	402	A
36	14	403	C
36	14	421	G
36	14	422	A
36	14	439	C
36	14	521	A
36	14	534	U
36	14	535	G
36	14	546	C
36	14	547	G
36	14	548	G
36	14	555	U
36	14	557	A
36	14	558	U
36	14	559	A
36	14	578	A
36	14	579	G
36	14	589	A
36	14	592	A
36	14	604	G
36	14	609	G
36	14	611	A
36	14	620	U
36	14	621	A
36	14	622	A
36	14	637	C
36	14	642	U
36	14	649	A
36	14	677	A

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Mol	Chain	Res	Type
36	14	681	U
36	14	690	A
36	14	691	A
36	14	705	A
36	14	712	G
36	14	715	A
36	14	764	U
36	14	765	C
36	14	766	U
36	14	767	U
36	14	776	U
36	14	777	U
36	14	781	G
36	14	785	G
36	14	786	A
36	14	787	G
36	14	806	A
36	14	817	A
36	14	830	A
36	14	835	G
36	14	849	C
36	14	861	C
36	14	874	U
36	14	879	U
36	14	880	G
36	14	896	A
36	14	908	G
36	14	914	A
36	14	916	G
36	14	917	A
36	14	922	U
36	14	925	A
36	14	937	G
36	14	938	C
36	14	940	G
36	14	944	C
36	14	959	C
36	14	960	U
36	14	963	G
36	14	974	G
36	14	979	U
36	14	980	A

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Mol	Chain	Res	Type
36	14	981	U
36	14	982	C
36	14	984	G
36	14	1001	G
36	14	1002	A
36	14	1006	A
36	14	1010	G
36	14	1015	U
36	14	1016	C
36	14	1017	C
36	14	1024	G
36	14	1025	A
36	14	1037	C
36	14	1041	U
36	14	1047	A
36	14	1049	C
36	14	1064	A
36	14	1065	A
36	14	1075	A
36	14	1076	C
36	14	1081	U
36	14	1093	A
36	14	1094	U
36	14	1095	U
36	14	1098	A
36	14	1103	A
36	14	1104	G
36	14	1117	G
36	14	1131	G
36	14	1144	U
36	14	1153	A
36	14	1159	A
36	14	1180	A
36	14	1181	U
36	14	1192	C
36	14	1196	C
36	14	1201	C
36	14	1205	A
36	14	1206	G
36	14	1209	G
36	14	1222	G
36	14	1235	U

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Mol	Chain	Res	Type
36	14	1236	G
36	14	1241	U
36	14	1242	G
36	14	1244	A
36	14	1246	G
36	14	1248	C
36	14	1253	U
36	14	1254	C
36	14	1258	U
36	14	1262	G
36	14	1263	A
36	14	1264	G
36	14	1269	U
36	14	1270	A
36	14	1271	A
36	14	1272	C
36	14	1273	A
36	14	1274	A
36	14	1278	A
36	14	1285	G
36	14	1287	A
36	14	1308	A
36	14	1309	U
36	14	1313	G
36	14	1316	C
36	14	1317	A
36	14	1323	G
36	14	1325	U
36	14	1330	A
36	14	1331	U
36	14	1348	U
36	14	1349	G
36	14	1351	U
36	14	1353	U
36	14	1355	A
36	14	1356	U
36	14	1357	G
36	14	1386	A
36	14	1392	G
36	14	1399	A
36	14	1400	G
36	14	1419	A

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Mol	Chain	Res	Type
36	14	1430	U
36	14	1434	G
36	14	1435	A
36	14	1437	C
36	14	1446	A
36	14	1447	G
36	14	1470	U
36	14	1480	G
36	14	1482	A
36	14	1483	G
36	14	1488	G
36	14	1493	G
36	14	1495	U
36	14	1496	C
36	14	1508	C
36	14	1523	U
36	14	1524	A
36	14	1554	U
36	14	1555	U
36	14	1556	C
36	14	1557	A
36	14	1560	G
36	14	1562	C
36	14	1563	C
36	14	1567	U
36	14	1568	U
36	14	1569	U
36	14	1570	U
36	14	1571	A
36	14	1572	U
36	14	1576	G
36	14	1578	C
36	14	1582	C
36	14	1583	A
36	14	1588	A
36	14	1589	A
36	14	1593	A
36	14	1596	C
36	14	1605	A
36	14	1606	U
36	14	1607	U
36	14	1629	U

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Mol	Chain	Res	Type
36	14	1630	U
36	14	1639	C
36	14	1642	A
36	14	1643	A
36	14	1645	U
36	14	1656	A
36	14	1657	C
36	14	1683	A
36	14	1714	A
36	14	1715	A
36	14	1716	U
36	14	1724	U
36	14	1725	C
36	14	1730	G
36	14	1736	G
36	14	1741	A
36	14	1742	U
36	14	1749	A
36	14	1751	G
36	14	1752	A
36	14	1760	A
36	14	1765	U
36	14	1766	G
36	14	1770	G
36	14	1775	G
36	14	1780	G
36	14	1796	G
36	14	1797	A
36	14	1808	G
36	14	1814	A
36	14	1816	A
36	14	1817	G
36	14	1820	U
36	14	1821	U
36	14	1835	A
36	14	1841	A
36	14	1847	A
36	14	1849	C
36	14	1850	A
36	14	1866	C
36	14	1867	A
36	14	1878	G

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Mol	Chain	Res	Type
36	14	1880	U
36	14	1893	A
36	14	1901	A
36	14	1906	G
36	14	1941	C
36	14	1944	U
36	14	1948	G
36	14	1949	G
36	14	1954	G
36	14	1955	U
36	14	1966	U
36	14	1967	U
36	14	1973	G
36	14	1974	A
36	14	1975	C
36	14	1976	G
36	14	2044	U
36	14	2047	A
36	14	2048	G
36	14	2060	A
36	14	2067	U
36	14	2068	U
36	14	2071	A
36	14	2072	G
36	14	2076	G
36	14	2077	U
36	14	2078	C
36	14	2079	G
36	14	2080	C
36	14	2081	U
36	14	2087	C
36	14	2088	A
36	14	2089	A
36	14	2090	U
36	14	2091	U
36	14	2092	A
36	14	2094	C
36	14	2095	G
36	14	2099	A
36	14	2107	A
36	14	2112	U
36	14	2113	A

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Mol	Chain	Res	Type
36	14	2114	C
36	14	2121	G
36	14	2122	G
36	14	2131	A
36	14	2140	U
36	14	2159	U
36	14	2160	G
36	14	2169	G
36	14	2174	G
36	14	2175	U
36	14	2176	U
36	14	2179	C
36	14	2205	U
36	14	2209	U
36	14	2210	G
36	14	2223	A
36	14	2225	U
36	14	2228	A
36	14	2244	A
36	14	2249	G
36	14	2257	C
36	14	2272	G
36	14	2273	G
36	14	2282	U
36	14	2286	U
36	14	2287	C
36	14	2288	G
36	14	2307	G
36	14	2308	C
36	14	2309	A
36	14	2310	U
36	14	2313	A
36	14	2314	U
36	14	2315	G
36	14	2334	U
36	14	2336	U
36	14	2339	C
36	14	2373	A
36	14	2374	C
36	14	2375	G
36	14	2376	G
36	14	2378	C

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Mol	Chain	Res	Type
36	14	2386	A
36	14	2394	G
36	14	2397	A
36	14	2401	A
36	14	2402	A
36	14	2403	G
36	14	2404	A
36	14	2411	U
36	14	2418	G
36	14	2435	G
36	14	2443	A
36	14	2444	C
36	14	2447	A
36	14	2448	G
36	14	2453	U
36	14	2454	G
36	14	2459	A
36	14	2462	A
36	14	2468	A
36	14	2469	G
36	14	2486	A
36	14	2487	U
36	14	2488	A
36	14	2506	U
36	14	2510	U
36	14	2511	A
36	14	2512	C
36	14	2514	U
36	14	2515	A
36	14	2522	G
36	14	2523	A
36	14	2526	C
36	14	2531	C
36	14	2532	U
36	14	2537	U
36	14	2538	U
36	14	2539	C
36	14	2541	U
36	14	2542	U
36	14	2544	U
36	14	2547	A
36	14	2548	C

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Mol	Chain	Res	Type
36	14	2552	C
36	14	2558	U
36	14	2561	A
36	14	2571	U
36	14	2572	C
36	14	2573	G
36	14	2580	A
36	14	2581	U
36	14	2585	G
36	14	2593	A
36	14	2594	C
36	14	2606	G
36	14	2607	G
36	14	2614	G
36	14	2652	U
36	14	2656	A
36	14	2672	G
36	14	2674	A
36	14	2677	G
36	14	2678	A
36	14	2681	U
36	14	2691	A
36	14	2694	A
36	14	2696	A
36	14	2703	A
36	14	2704	A
36	14	2705	A
36	14	2706	G
36	14	2715	A
36	14	2728	G
36	14	2729	U
36	14	2753	G
36	14	2755	C
36	14	2777	G
36	14	2778	G
36	14	2796	G
36	14	2800	G
36	14	2801	A
36	14	2803	A
36	14	2804	A
36	14	2810	C
36	14	2814	G

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Mol	Chain	Res	Type
36	14	2817	A
36	14	2818	U
36	14	2834	G
36	14	2842	U
36	14	2844	C
36	14	2845	A
36	14	2860	U
36	14	2867	C
36	14	2871	G
36	14	2872	A
36	14	2873	U
36	14	2874	G
36	14	2875	U
36	14	2887	A
36	14	2899	C
36	14	2918	G
36	14	2923	U
36	14	2935	U
36	14	2936	A
36	14	2938	G
36	14	2941	A
36	14	2942	C
36	14	2951	G
36	14	2957	G
36	14	2971	A
36	14	2972	G
36	14	2983	C
36	14	2996	U
36	14	2997	G
36	14	3011	A
36	14	3012	A
36	14	3030	G
36	14	3049	A
36	14	3078	U
36	14	3080	G
36	14	3086	A
36	14	3092	C
36	14	3098	G
36	14	3121	U
36	14	3122	A
36	14	3130	A
36	14	3131	U

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Mol	Chain	Res	Type
36	14	3142	A
36	14	3143	C
36	14	3153	U
36	14	3154	C
36	14	3155	U
36	14	3156	U
36	14	3157	U
36	14	3165	A
36	14	3170	A
36	14	3172	A
36	14	3173	G
36	14	3174	A
36	14	3176	G
36	14	3179	U
36	14	3181	C
36	14	3185	U
36	14	3186	A
36	14	3187	A
36	14	3199	G
36	14	3206	C
36	14	3207	U
36	14	3208	G
36	14	3209	A
36	14	3216	G
36	14	3217	C
36	14	3218	A
36	14	3219	G
36	14	3243	A
36	14	3244	A
36	14	3247	G
36	14	3270	U
36	14	3271	G
36	14	3276	G
36	14	3279	A
36	14	3294	A
36	14	3304	U
36	14	3313	U
36	14	3319	U
36	14	3320	A
36	14	3341	U
36	14	3345	G
36	14	3352	U

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Mol	Chain	Res	Type
36	14	3353	G
36	14	3354	U
36	14	3355	U
36	14	3356	G
36	14	3368	U
36	14	3369	G
36	14	3370	A
36	14	3375	A
36	14	3378	C
36	14	3390	G
36	14	3396	U
37	34	42	A
37	34	54	U
37	34	55	A
37	34	65	G
37	34	76	A
37	34	77	G
37	34	87	G
37	34	99	G
37	34	112	G
37	34	121	U
38	44	23	U
38	44	24	G
38	44	34	U
38	44	35	C
38	44	37	A
38	44	38	U
38	44	39	G
38	44	49	G
38	44	51	G
38	44	59	A
38	44	62	C
38	44	63	G
38	44	71	A
38	44	80	A
38	44	81	U
38	44	82	U
38	44	84	C
38	44	85	G
38	44	86	U
38	44	87	G
38	44	90	U

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Mol	Chain	Res	Type
38	44	91	C
38	44	95	G
38	44	104	A
38	44	106	C
38	44	107	G
38	44	113	U
38	44	118	C
38	44	125	U
38	44	126	A
38	44	138	A
38	44	151	C
38	44	152	G
38	44	155	A
81	X7	8	A
81	X7	10	G
81	X7	11	U
81	X7	12	A
81	X7	13	A
81	X7	17	U
82	A3	9	A
82	A3	11	C
82	A3	14	A
82	A3	15	G
82	A3	16	H2U
82	A3	17	H2U
82	A3	18	G
82	A3	20	G
82	A3	21	A
82	A3	22	G
82	A3	25	C
82	A3	26	M2G
82	A3	46	7MG
82	A3	47	U
82	A3	48	C
82	A3	49	5MC
82	A3	52	U
82	A3	54	5MU
82	A3	55	PSU
82	A3	56	C
82	A3	57	G
82	A3	58	1MA
82	A3	59	U

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Mol	Chain	Res	Type
82	A3	76	A

All (118) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
34	22	56	U
34	22	73	U
34	22	99	C
34	22	131	C
34	22	133	U
34	22	139	C
34	22	216	U
34	22	280	U
34	22	315	A
34	22	322	G
34	22	417	A
34	22	444	C
34	22	497	G
34	22	503	G
34	22	538	A
34	22	555	A
34	22	578	U
34	22	580	A
34	22	622	A
34	22	657	U
34	22	686	C
34	22	720	G
34	22	721	U
34	22	782	U
34	22	812	A
34	22	819	G
34	22	1113	A
34	22	1137	A
34	22	1157	A
34	22	1207	C
34	22	1250	U
34	22	1344	A
34	22	1388	A
34	22	1447	C
34	22	1481	C
34	22	1491	U
34	22	1568	C

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Mol	Chain	Res	Type
34	22	1573	A
34	22	1600	A
34	22	1696	G
34	22	1761	U
34	22	1769	U
36	14	13	A
36	14	199	A
36	14	210	U
36	14	239	G
36	14	282	G
36	14	337	G
36	14	338	A
36	14	352	A
36	14	533	A
36	14	547	G
36	14	763	G
36	14	764	U
36	14	786	A
36	14	916	G
36	14	979	U
36	14	1015	U
36	14	1064	A
36	14	1094	U
36	14	1097	G
36	14	1103	A
36	14	1116	G
36	14	1253	U
36	14	1307	G
36	14	1317	A
36	14	1355	A
36	14	1418	A
36	14	1493	G
36	14	1554	U
36	14	1559	A
36	14	1562	C
36	14	1570	U
36	14	1656	A
36	14	1715	A
36	14	1729	A
36	14	1748	G
36	14	1750	A
36	14	1815	U

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Mol	Chain	Res	Type
36	14	1816	A
36	14	1846	C
36	14	1848	G
36	14	1866	C
36	14	1900	A
36	14	1943	C
36	14	1965	C
36	14	2043	U
36	14	2046	U
36	14	2080	C
36	14	2086	A
36	14	2090	U
36	14	2093	A
36	14	2112	U
36	14	2209	U
36	14	2227	C
36	14	2286	U
36	14	2307	G
36	14	2309	A
36	14	2335	G
36	14	2447	A
36	14	2468	A
36	14	2487	U
36	14	2509	U
36	14	2513	U
36	14	2525	G
36	14	2537	U
36	14	2541	U
36	14	2570	U
36	14	2580	A
36	14	2593	A
36	14	2705	A
36	14	2950	G
36	14	2971	A
36	14	3011	A
36	14	3121	U
36	14	3198	U
82	A3	19	G
82	A3	58	1MA

5.4 Non-standard residues in protein, DNA, RNA chains (i)

14 non-standard protein/DNA/RNA residues are modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
82	1MA	A3	58	82	16,25,26	1.35	3 (18%)	18,37,40	0.93	1 (5%)
82	OMC	A3	32	82	19,22,23	1.57	3 (15%)	26,31,34	1.30	4 (15%)
82	H2U	A3	16	82	18,21,22	1.20	2 (11%)	21,30,33	1.26	3 (14%)
82	5MC	A3	40	82	18,22,23	0.87	0	26,32,35	1.17	3 (11%)
82	M2G	A3	26	82,84	20,27,28	1.43	2 (10%)	22,40,43	1.49	3 (13%)
82	2MG	A3	10	82	18,26,27	2.42	6 (33%)	16,38,41	1.63	3 (18%)
82	PSU	A3	55	82	18,21,22	2.68	7 (38%)	22,30,33	1.52	4 (18%)
82	7MG	A3	46	82	22,26,27	3.58	7 (31%)	29,39,42	2.07	8 (27%)
82	PSU	A3	39	82	18,21,22	2.61	7 (38%)	22,30,33	1.63	5 (22%)
82	5MU	A3	54	82	19,22,23	1.13	2 (10%)	28,32,35	1.38	4 (14%)
82	OMG	A3	34	82,81	18,25,27	1.96	3 (16%)	19,37,41	1.60	3 (15%)
82	H2U	A3	17	82	18,21,22	1.17	2 (11%)	21,30,33	1.11	3 (14%)
82	YYG	A3	37	82	31,42,43	1.90	8 (25%)	33,62,65	2.06	8 (24%)
82	5MC	A3	49	82	18,22,23	0.75	0	26,32,35	1.19	2 (7%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
82	1MA	A3	58	82	-	2/3/25/26	0/3/3/3
82	OMC	A3	32	82	-	0/9/27/28	0/2/2/2
82	H2U	A3	16	82	-	5/7/38/39	0/2/2/2
82	5MC	A3	40	82	-	0/7/25/26	0/2/2/2
82	M2G	A3	26	82,84	-	2/7/29/30	0/3/3/3
82	2MG	A3	10	82	-	2/5/27/28	0/3/3/3

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
82	PSU	A3	55	82	-	4/7/25/26	0/2/2/2
82	7MG	A3	46	82	-	3/7/37/38	0/3/3/3
82	PSU	A3	39	82	-	0/7/25/26	0/2/2/2
82	5MU	A3	54	82	-	2/7/25/26	0/2/2/2
82	OMG	A3	34	82,81	-	2/3/25/28	0/3/3/3
82	H2U	A3	17	82	-	3/7/38/39	0/2/2/2
82	YYG	A3	37	82	-	8/20/42/43	0/3/4/4
82	5MC	A3	49	82	-	2/7/25/26	0/2/2/2

All (52) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
82	A3	46	7MG	C8-N9	10.50	1.51	1.46
82	A3	46	7MG	C5-N7	8.10	1.44	1.35
82	A3	37	YYG	C12-N1	6.65	1.48	1.36
82	A3	10	2MG	C6-N1	6.40	1.47	1.37
82	A3	10	2MG	C2-N2	6.08	1.46	1.33
82	A3	55	PSU	C1'-C5	6.03	1.64	1.50
82	A3	46	7MG	C4-N9	5.96	1.44	1.37
82	A3	39	PSU	C1'-C5	5.84	1.63	1.50
82	A3	34	OMG	C6-N1	5.37	1.45	1.37
82	A3	34	OMG	C2-N2	4.92	1.45	1.34
82	A3	55	PSU	C6-N1	4.70	1.44	1.36
82	A3	39	PSU	C6-N1	4.70	1.44	1.36
82	A3	55	PSU	C4-N3	4.43	1.47	1.38
82	A3	46	7MG	C2-N2	4.40	1.44	1.34
82	A3	39	PSU	C4-N3	4.35	1.46	1.38
82	A3	26	M2G	C2-N2	4.34	1.43	1.35
82	A3	55	PSU	C2-N1	4.19	1.42	1.36
82	A3	37	YYG	O23-C21	4.17	1.41	1.34
82	A3	39	PSU	C2-N1	3.89	1.42	1.36
82	A3	32	OMC	C2-N1	3.80	1.48	1.40
82	A3	55	PSU	C2-N3	3.79	1.44	1.37
82	A3	46	7MG	C6-N1	3.79	1.45	1.38
82	A3	39	PSU	C2-N3	3.77	1.44	1.37
82	A3	46	7MG	C4-N3	3.76	1.43	1.34
82	A3	32	OMC	C4-N4	3.70	1.42	1.33
82	A3	46	7MG	C2-N3	3.58	1.41	1.33
82	A3	32	OMC	C2-N3	3.49	1.43	1.36
82	A3	17	H2U	C2-N3	3.39	1.44	1.38
82	A3	16	H2U	C2-N1	3.38	1.40	1.35

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
82	A3	16	H2U	C2-N3	3.30	1.43	1.38
82	A3	17	H2U	C2-N1	3.19	1.40	1.35
82	A3	37	YYG	C21-N20	3.16	1.42	1.34
82	A3	58	1MA	C2-N3	3.13	1.32	1.29
82	A3	54	5MU	C4-N3	2.93	1.44	1.38
82	A3	10	2MG	C2-N1	2.73	1.41	1.36
82	A3	37	YYG	C15-N20	2.64	1.51	1.45
82	A3	55	PSU	O4'-C1'	-2.60	1.40	1.43
82	A3	58	1MA	C2-N1	2.53	1.40	1.35
82	A3	55	PSU	C4-C5	2.50	1.51	1.44
82	A3	39	PSU	C4-C5	2.48	1.51	1.44
82	A3	54	5MU	C2-N1	2.38	1.42	1.38
82	A3	37	YYG	O18-C16	2.36	1.39	1.33
82	A3	58	1MA	CM1-N1	2.33	1.51	1.46
82	A3	37	YYG	C15-C16	2.32	1.58	1.52
82	A3	26	M2G	C2-N3	2.27	1.33	1.30
82	A3	39	PSU	O4'-C1'	-2.27	1.40	1.43
82	A3	10	2MG	C4-N3	2.27	1.42	1.37
82	A3	34	OMG	C5-C4	-2.20	1.37	1.43
82	A3	37	YYG	C14-C15	2.20	1.58	1.53
82	A3	10	2MG	C5-C4	-2.09	1.37	1.43
82	A3	37	YYG	O6-C6	-2.07	1.19	1.22
82	A3	10	2MG	C5-C6	-2.04	1.43	1.47

All (54) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
82	A3	37	YYG	O23-C21-N20	6.65	122.48	110.80
82	A3	37	YYG	O23-C21-O22	-5.58	116.38	124.58
82	A3	46	7MG	C2-N3-C4	5.39	121.91	112.30
82	A3	10	2MG	O6-C6-N1	-5.05	114.68	120.65
82	A3	34	OMG	O6-C6-N1	-5.01	114.74	120.65
82	A3	26	M2G	N1-C2-N2	-4.58	114.13	118.04
82	A3	46	7MG	C4-C5-N7	4.47	111.73	105.53
82	A3	46	7MG	C5-C6-N1	4.00	118.04	110.99
82	A3	39	PSU	C4-N3-C2	-3.87	120.76	126.34
82	A3	39	PSU	N1-C2-N3	3.83	119.47	115.13
82	A3	55	PSU	C4-N3-C2	-3.79	120.87	126.34
82	A3	37	YYG	O18-C16-C15	3.79	121.21	111.52
82	A3	37	YYG	O18-C16-O17	-3.62	116.77	123.84
82	A3	54	5MU	C4-N3-C2	-3.62	122.67	127.35
82	A3	26	M2G	O6-C6-N1	-3.60	116.40	120.65

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
82	A3	55	PSU	N1-C2-N3	3.58	119.19	115.13
82	A3	46	7MG	C5-C4-N3	-3.46	121.55	128.13
82	A3	54	5MU	C6-N1-C2	-3.09	118.17	121.30
82	A3	37	YYG	C5-C6-N1	3.04	118.50	113.96
82	A3	54	5MU	N3-C2-N1	3.03	118.91	114.89
82	A3	46	7MG	N9-C4-N3	2.92	129.84	125.47
82	A3	16	H2U	O2-C2-N1	2.92	126.77	123.11
82	A3	46	7MG	N1-C2-N3	-2.92	117.88	123.32
82	A3	34	OMG	C2-N1-C6	-2.91	119.73	125.10
82	A3	16	H2U	C5-C4-N3	2.84	119.84	116.65
82	A3	10	2MG	C5-C6-N1	2.77	118.84	113.95
82	A3	32	OMC	N4-C4-N3	2.77	122.82	117.97
82	A3	32	OMC	C6-N1-C2	-2.76	115.71	120.49
82	A3	16	H2U	O2-C2-N3	-2.75	116.38	121.50
82	A3	32	OMC	C1'-N1-C2	2.72	124.50	118.42
82	A3	37	YYG	C24-O23-C21	2.66	118.80	115.66
82	A3	39	PSU	O2-C2-N1	-2.60	119.92	122.79
82	A3	37	YYG	C14-C13-C12	2.60	118.54	112.66
82	A3	54	5MU	C5-C6-N1	2.59	126.00	123.34
82	A3	17	H2U	O2-C2-N3	-2.59	116.68	121.50
82	A3	17	H2U	O2-C2-N1	2.58	126.35	123.11
82	A3	17	H2U	C5-C4-N3	2.53	119.49	116.65
82	A3	49	5MC	C5-C4-N3	2.50	124.37	121.67
82	A3	39	PSU	O4-C4-N3	-2.43	115.45	120.12
82	A3	40	5MC	O2-C2-N3	-2.42	118.39	122.33
82	A3	32	OMC	C5-C4-N3	-2.38	117.27	121.33
82	A3	49	5MC	O2-C2-N3	-2.34	118.52	122.33
82	A3	26	M2G	O6-C6-C5	2.31	128.88	124.37
82	A3	55	PSU	O4-C4-N3	-2.30	115.70	120.12
82	A3	55	PSU	O2-C2-N1	-2.28	120.28	122.79
82	A3	46	7MG	O6-C6-N1	-2.27	115.76	120.12
82	A3	37	YYG	O22-C21-N20	-2.27	121.14	124.85
82	A3	46	7MG	C6-C5-C4	-2.22	118.05	122.62
82	A3	39	PSU	C6-N1-C2	-2.21	120.43	122.68
82	A3	40	5MC	C1'-N1-C2	2.15	123.22	118.42
82	A3	10	2MG	C8-N7-C5	2.14	107.08	102.99
82	A3	34	OMG	C5-C6-N1	2.13	117.71	113.95
82	A3	58	1MA	C8-N7-C5	2.12	107.02	102.99
82	A3	40	5MC	C5-C4-N3	2.05	123.88	121.67

There are no chirality outliers.

All (35) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
82	A3	16	H2U	O4'-C4'-C5'-O5'
82	A3	16	H2U	C3'-C4'-C5'-O5'
82	A3	16	H2U	O4'-C1'-N1-C6
82	A3	17	H2U	O4'-C4'-C5'-O5'
82	A3	17	H2U	C3'-C4'-C5'-O5'
82	A3	26	M2G	C3'-C4'-C5'-O5'
82	A3	37	YYG	C15-C16-O18-C19
82	A3	37	YYG	N20-C21-O23-C24
82	A3	37	YYG	O22-C21-O23-C24
82	A3	46	7MG	C3'-C4'-C5'-O5'
82	A3	49	5MC	O4'-C4'-C5'-O5'
82	A3	54	5MU	C3'-C4'-C5'-O5'
82	A3	54	5MU	O4'-C4'-C5'-O5'
82	A3	55	PSU	C3'-C4'-C5'-O5'
82	A3	37	YYG	O17-C16-O18-C19
82	A3	49	5MC	C3'-C4'-C5'-O5'
82	A3	55	PSU	O4'-C4'-C5'-O5'
82	A3	58	1MA	C3'-C4'-C5'-O5'
82	A3	26	M2G	O4'-C4'-C5'-O5'
82	A3	46	7MG	O4'-C4'-C5'-O5'
82	A3	16	H2U	C4'-C5'-O5'-P
82	A3	10	2MG	O4'-C4'-C5'-O5'
82	A3	58	1MA	O4'-C4'-C5'-O5'
82	A3	16	H2U	O4'-C1'-N1-C2
82	A3	46	7MG	C4'-C5'-O5'-P
82	A3	55	PSU	C4'-C5'-O5'-P
82	A3	34	OMG	C3'-C4'-C5'-O5'
82	A3	55	PSU	O4'-C1'-C5-C4
82	A3	10	2MG	C3'-C4'-C5'-O5'
82	A3	37	YYG	C16-C15-N20-C21
82	A3	37	YYG	C14-C15-C16-O18
82	A3	37	YYG	C14-C15-C16-O17
82	A3	17	H2U	O4'-C1'-N1-C6
82	A3	34	OMG	O4'-C4'-C5'-O5'
82	A3	37	YYG	C12-C13-C14-C15

There are no ring outliers.

No monomer is involved in short contacts.

5.5 Carbohydrates (i)

There are no monosaccharides in this entry.

5.6 Ligand geometry (i)

Of 1068 ligands modelled in this entry, 1066 are monoatomic - leaving 2 for Mogul analysis.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
85	GNP	A6	701	84	29,34,34	1.76	5 (17%)	33,54,54	2.58	11 (33%)
86	5CR	A3	101	82	13,14,15	0.57	0	16,17,19	1.12	2 (12%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
85	GNP	A6	701	84	-	8/14/38/38	0/3/3/3
86	5CR	A3	101	82	-	0/9/10/12	0/1/1/1

All (5) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
85	A6	701	GNP	PB-O3A	-5.09	1.52	1.59
85	A6	701	GNP	C6-N1	3.84	1.39	1.33
85	A6	701	GNP	PG-O1G	3.29	1.51	1.46
85	A6	701	GNP	PB-O2B	-3.15	1.48	1.56
85	A6	701	GNP	C8-N7	-2.18	1.30	1.34

All (13) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
85	A6	701	GNP	C5-C6-N1	-8.55	111.74	123.43
85	A6	701	GNP	C2-N1-C6	5.61	124.84	115.93
85	A6	701	GNP	O1G-PG-N3B	-4.37	105.34	111.77
85	A6	701	GNP	O2B-PB-O1B	4.13	118.59	109.92
85	A6	701	GNP	O1B-PB-N3B	-3.99	105.90	111.77
85	A6	701	GNP	O3G-PG-O1G	-3.33	105.08	113.45

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
85	A6	701	GNP	C2-N3-C4	-3.02	111.91	115.36
85	A6	701	GNP	O2G-PG-O3G	2.96	115.51	107.64
85	A6	701	GNP	PB-O3A-PA	-2.93	122.28	132.62
86	A3	101	5CR	O-C-CA	-2.85	117.31	124.78
85	A6	701	GNP	C3'-C2'-C1'	2.46	104.68	100.98
85	A6	701	GNP	N3-C2-N1	-2.40	124.02	127.22
86	A3	101	5CR	CG-CB-CA	-2.23	110.43	113.63

There are no chirality outliers.

All (8) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
85	A6	701	GNP	PB-N3B-PG-O1G
85	A6	701	GNP	PG-N3B-PB-O1B
85	A6	701	GNP	PG-N3B-PB-O3A
85	A6	701	GNP	PA-O3A-PB-O1B
85	A6	701	GNP	PA-O3A-PB-O2B
85	A6	701	GNP	C5'-O5'-PA-O3A
85	A6	701	GNP	C5'-O5'-PA-O1A
85	A6	701	GNP	C3'-C4'-C5'-O5'

There are no ring outliers.

No monomer is involved in short contacts.

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less then 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.

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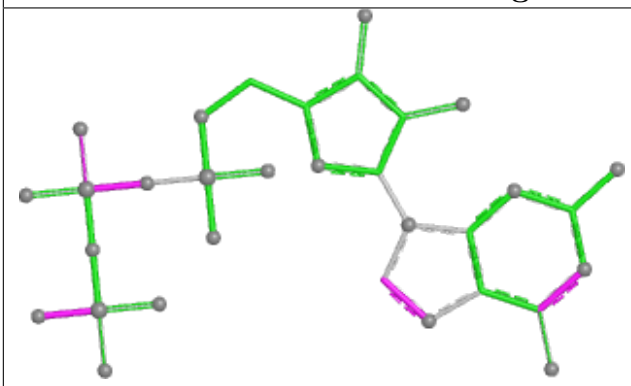
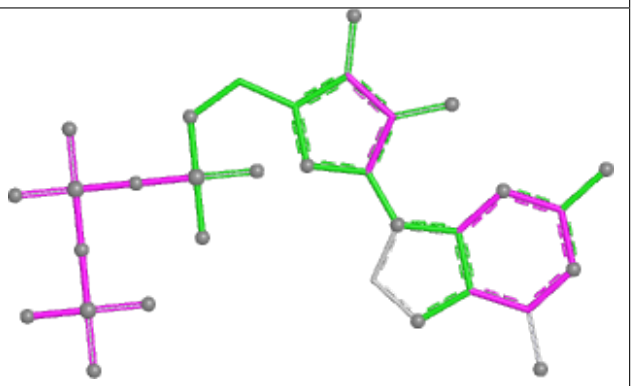
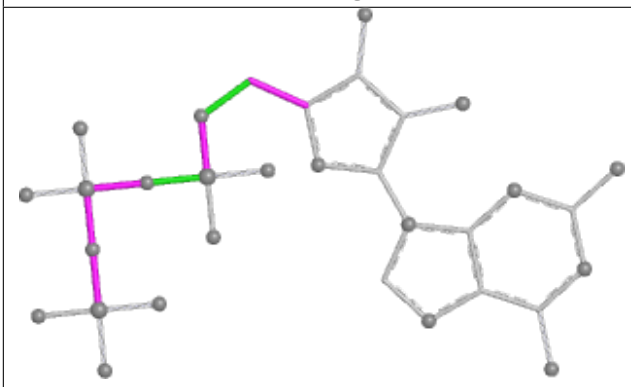


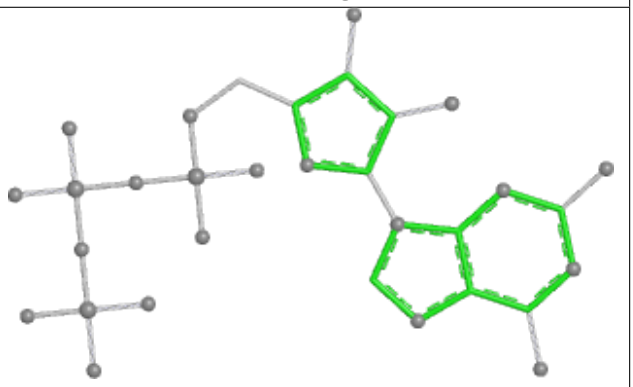
Bond lengths



Bond angles



Torsions



Rings

5.7 Other polymers

There are no such residues in this entry.

5.8 Polymer linkage issues

There are no chain breaks in this entry.

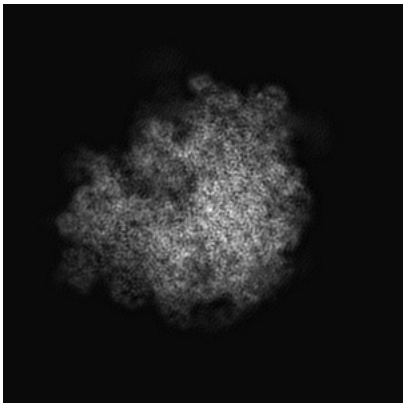
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-4140. These allow visual inspection of the internal detail of the map and identification of artifacts.

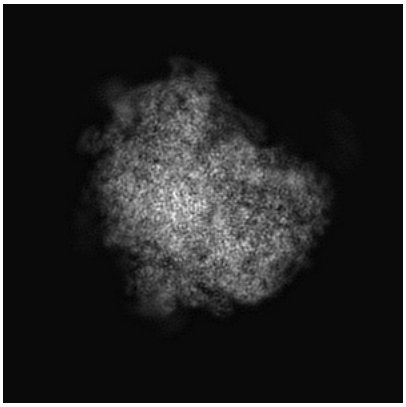
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections

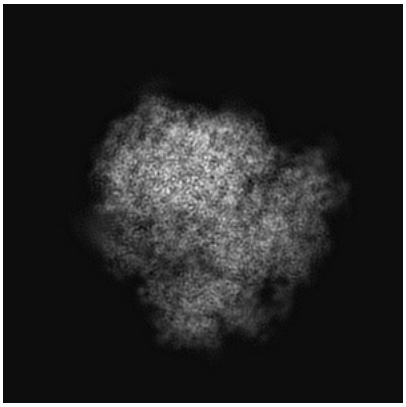
6.1.1 Primary map



X



Y

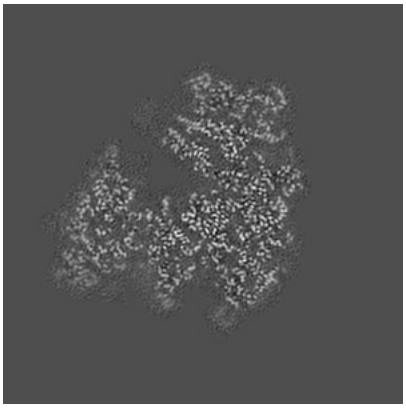


Z

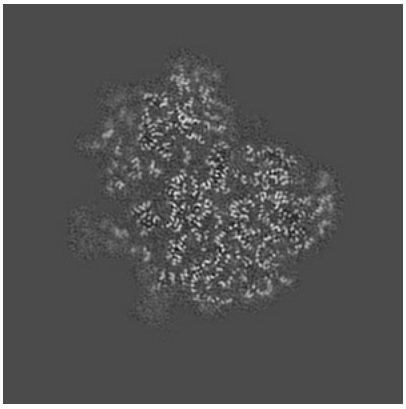
The images above show the map projected in three orthogonal directions.

6.2 Central slices

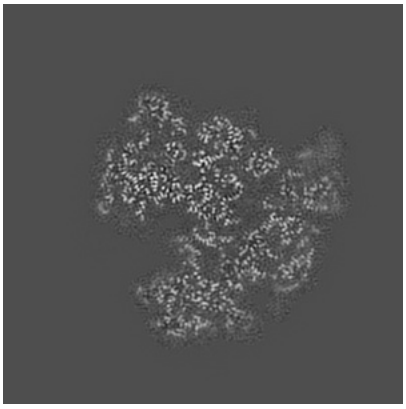
6.2.1 Primary map



X Index: 206



Y Index: 206

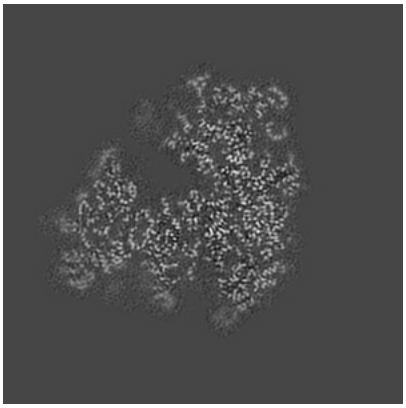


Z Index: 206

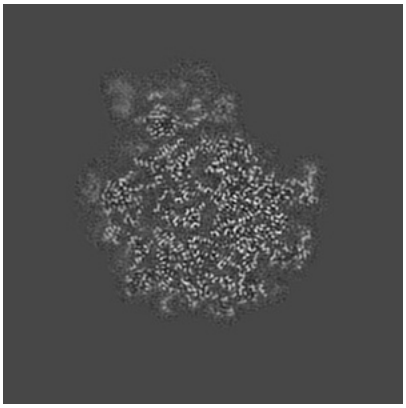
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

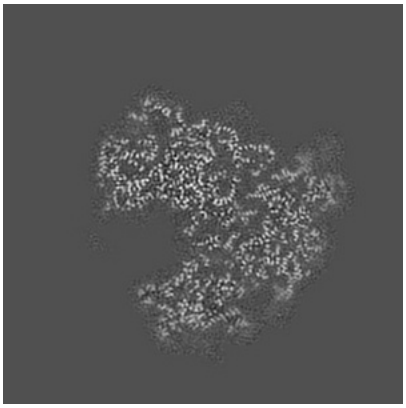
6.3.1 Primary map



X Index: 209



Y Index: 239

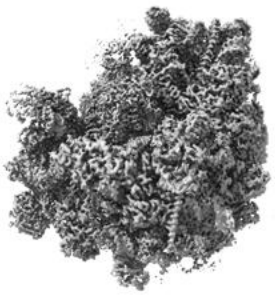


Z Index: 198

The images above show the largest variance slices of the map in three orthogonal directions.

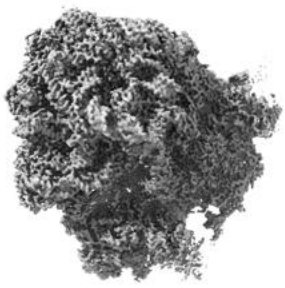
6.4 Orthogonal surface views (i)

6.4.1 Primary map



X

Y



Z

The images above show the 3D surface view of the map at the recommended contour level 3.5. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

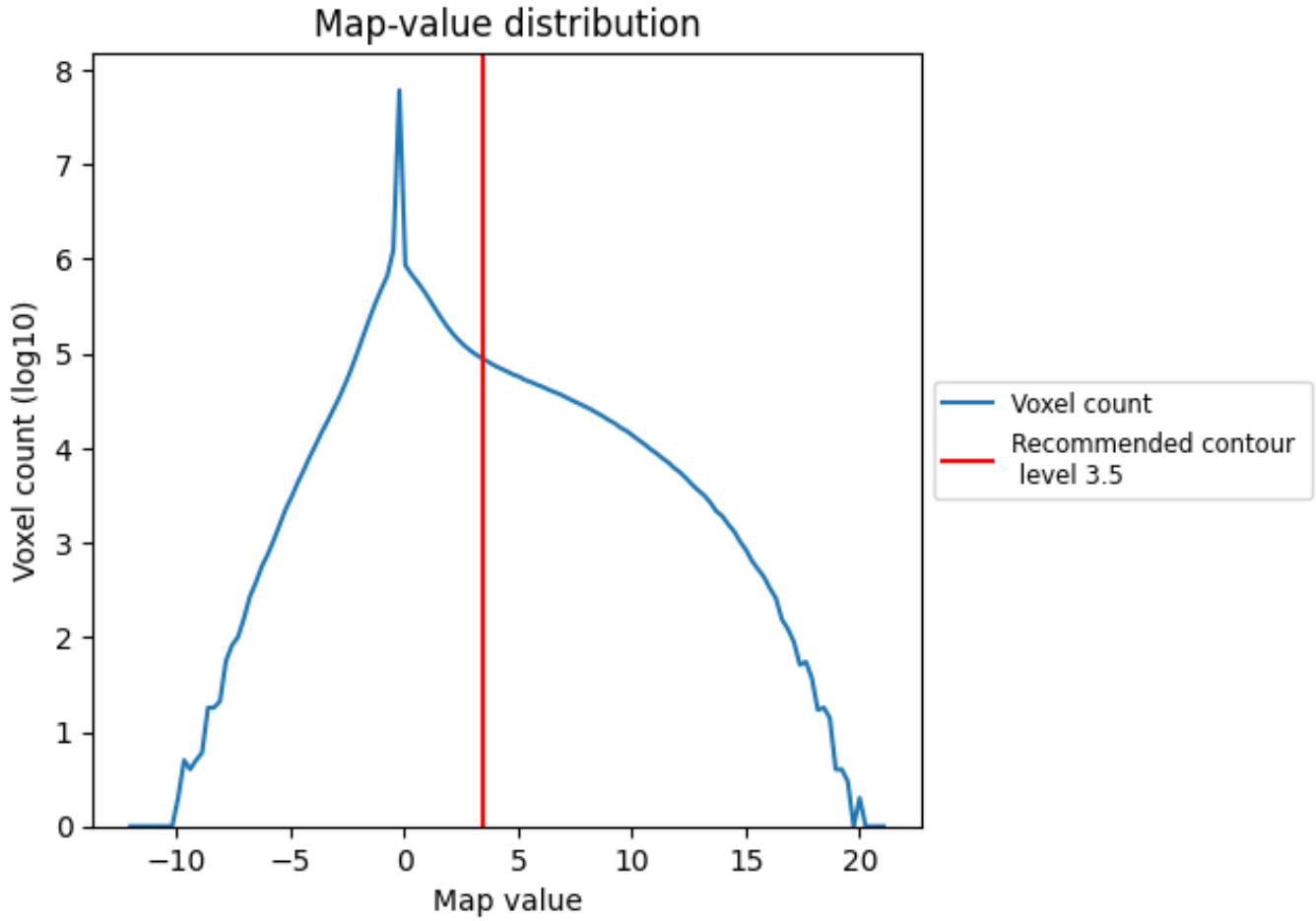
6.5 Mask visualisation (i)

This section was not generated. No masks/segmentation were deposited.

7 Map analysis

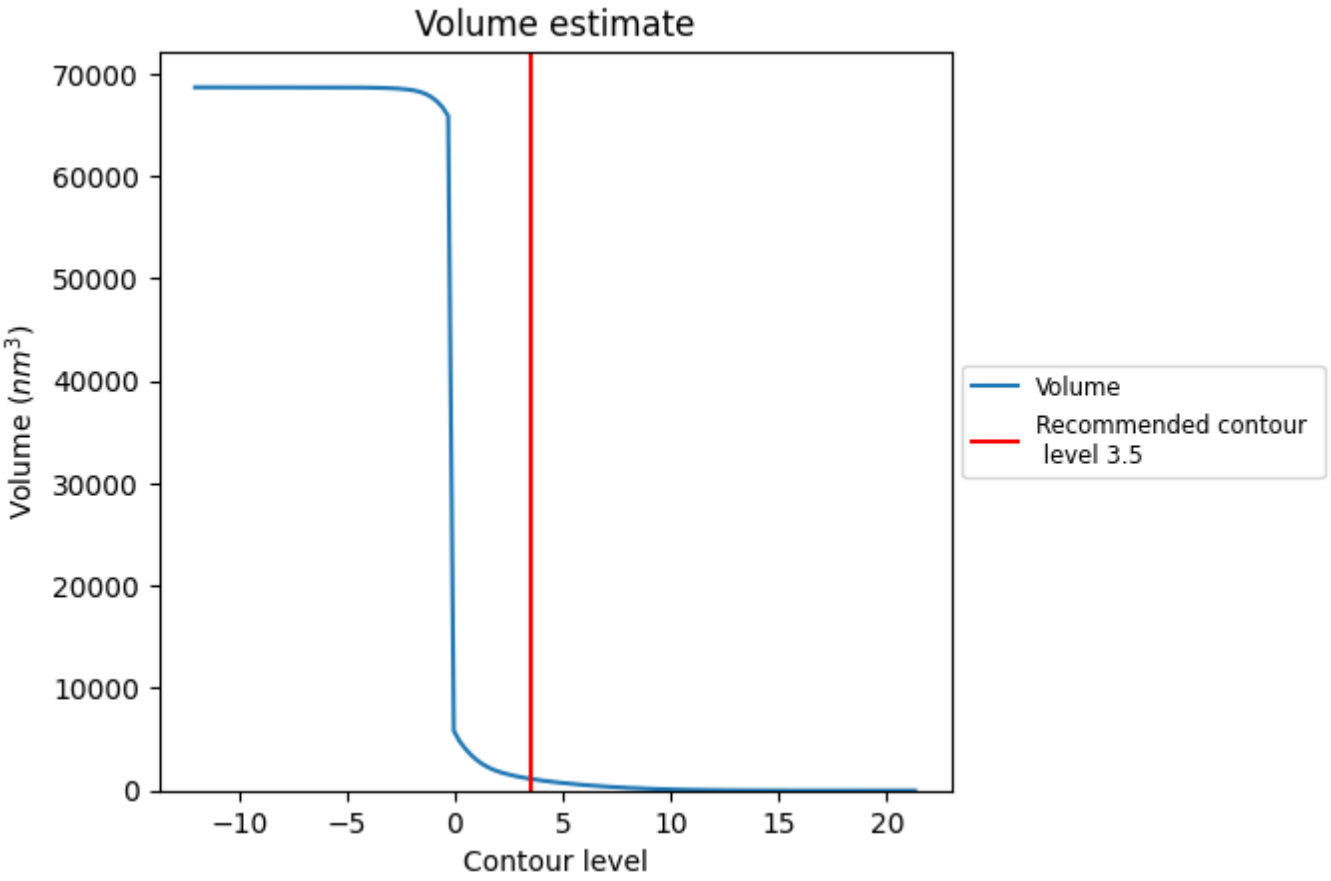
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution



The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

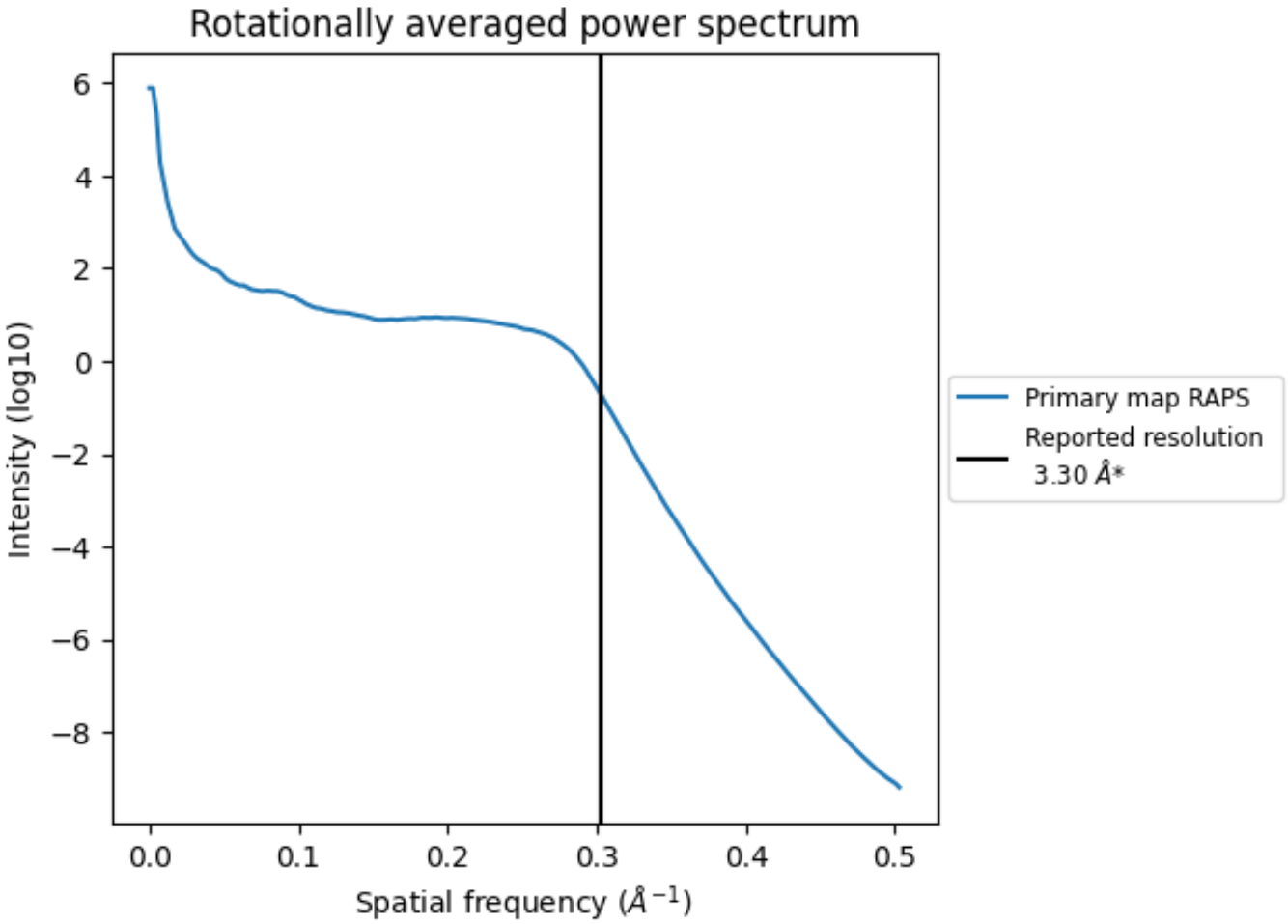
7.2 Volume estimate



The volume at the recommended contour level is 1149 nm^3; this corresponds to an approximate mass of 1038 kDa.

The volume estimate graph shows how the enclosed volume varies with the contour level. The recommended contour level is shown as a vertical line and the intersection between the line and the curve gives the volume of the enclosed surface at the given level.

7.3 Rotationally averaged power spectrum (i)

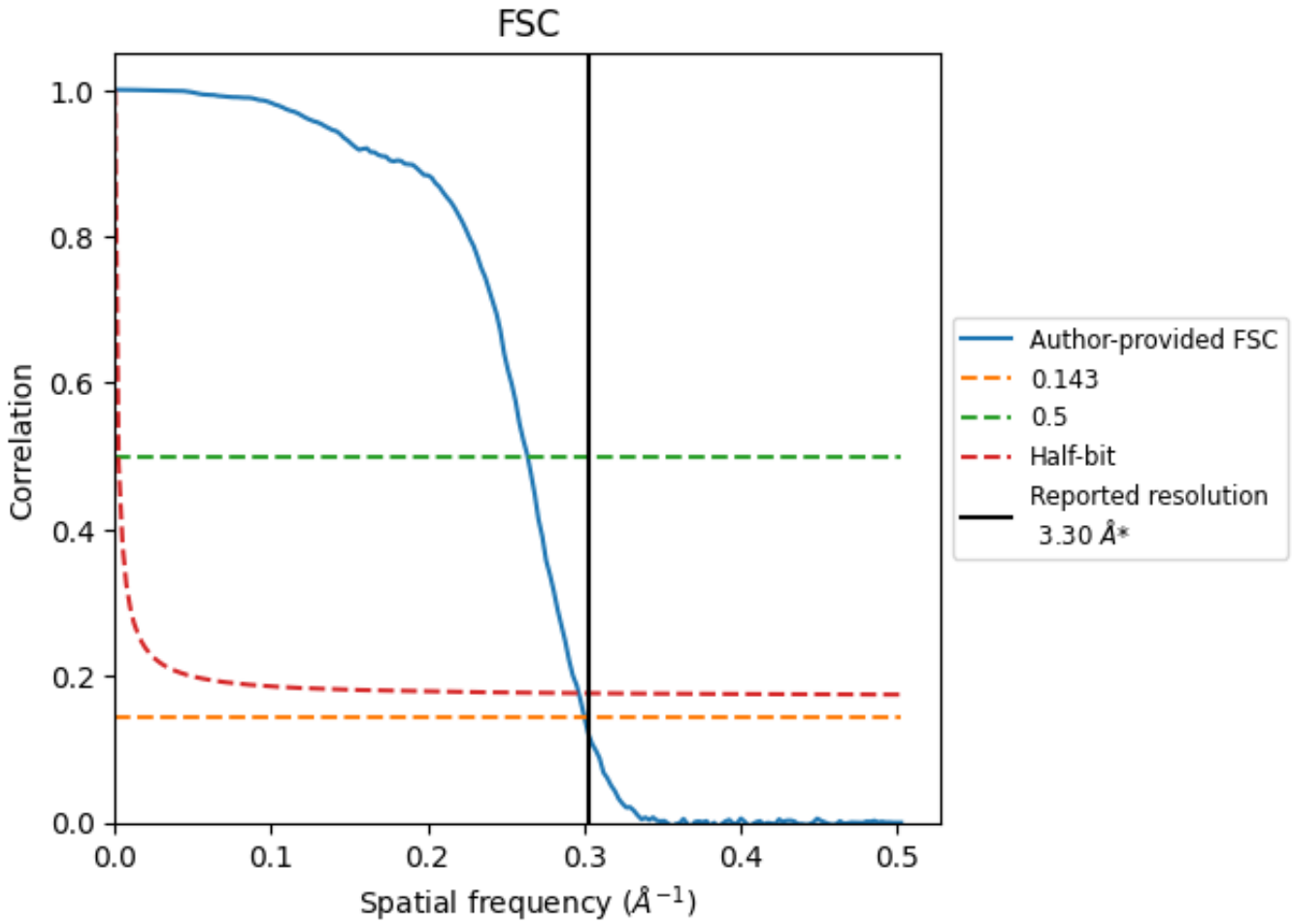


*Reported resolution corresponds to spatial frequency of 0.303 Å^{-1}

8 Fourier-Shell correlation

Fourier-Shell Correlation (FSC) is the most commonly used method to estimate the resolution of single-particle and subtomogram-averaged maps. The shape of the curve depends on the imposed symmetry, mask and whether or not the two 3D reconstructions used were processed from a common reference. The reported resolution is shown as a black line. A curve is displayed for the half-bit criterion in addition to lines showing the 0.143 gold standard cut-off and 0.5 cut-off.

8.1 FSC



*Reported resolution corresponds to spatial frequency of 0.303 Å^{-1}

8.2 Resolution estimates (i)

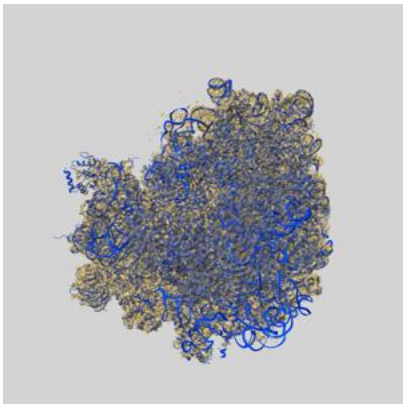
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.30	-	-
Author-provided FSC curve	3.33	3.79	3.37
Unmasked-calculated*	-	-	-

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps.

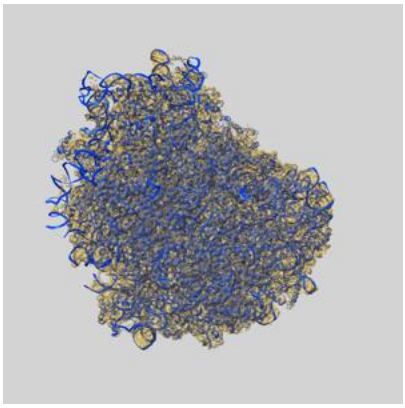
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-4140 and PDB model 5M1J. Per-residue inclusion information can be found in section 3 on page 23.

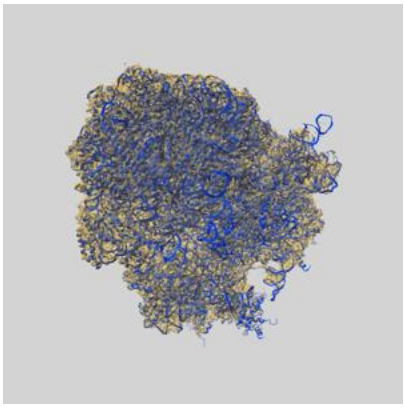
9.1 Map-model overlay



X



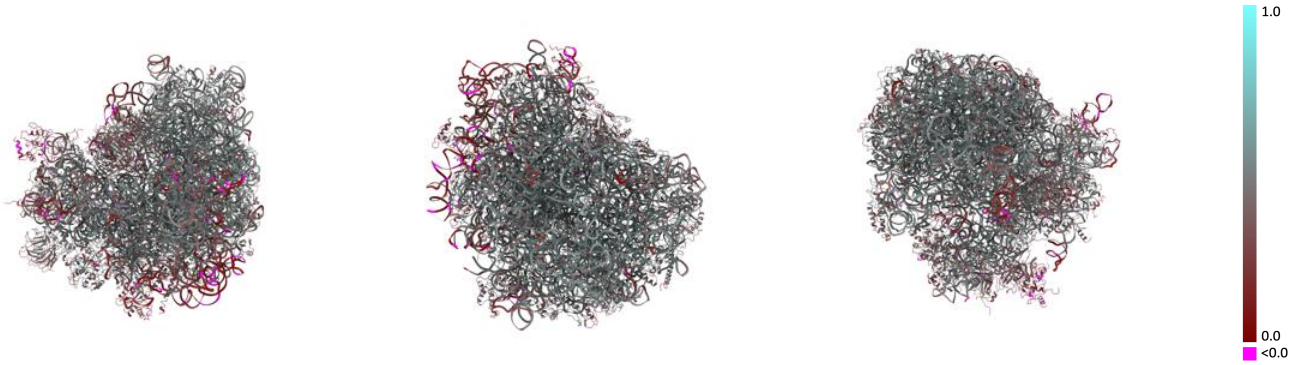
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 3.5 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

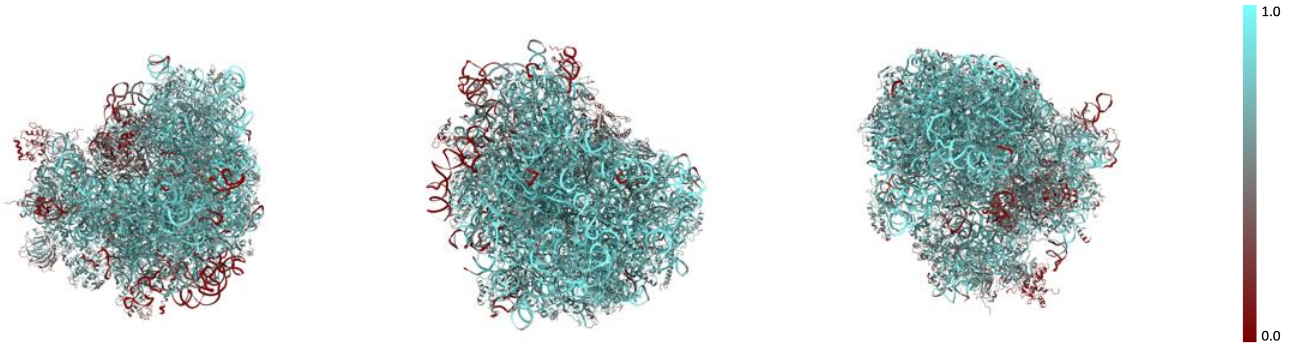
9.2 Q-score mapped to coordinate model (i)



X Y Z

The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions at which atoms can be resolved. Low Q-score values may therefore be expected for many entries.

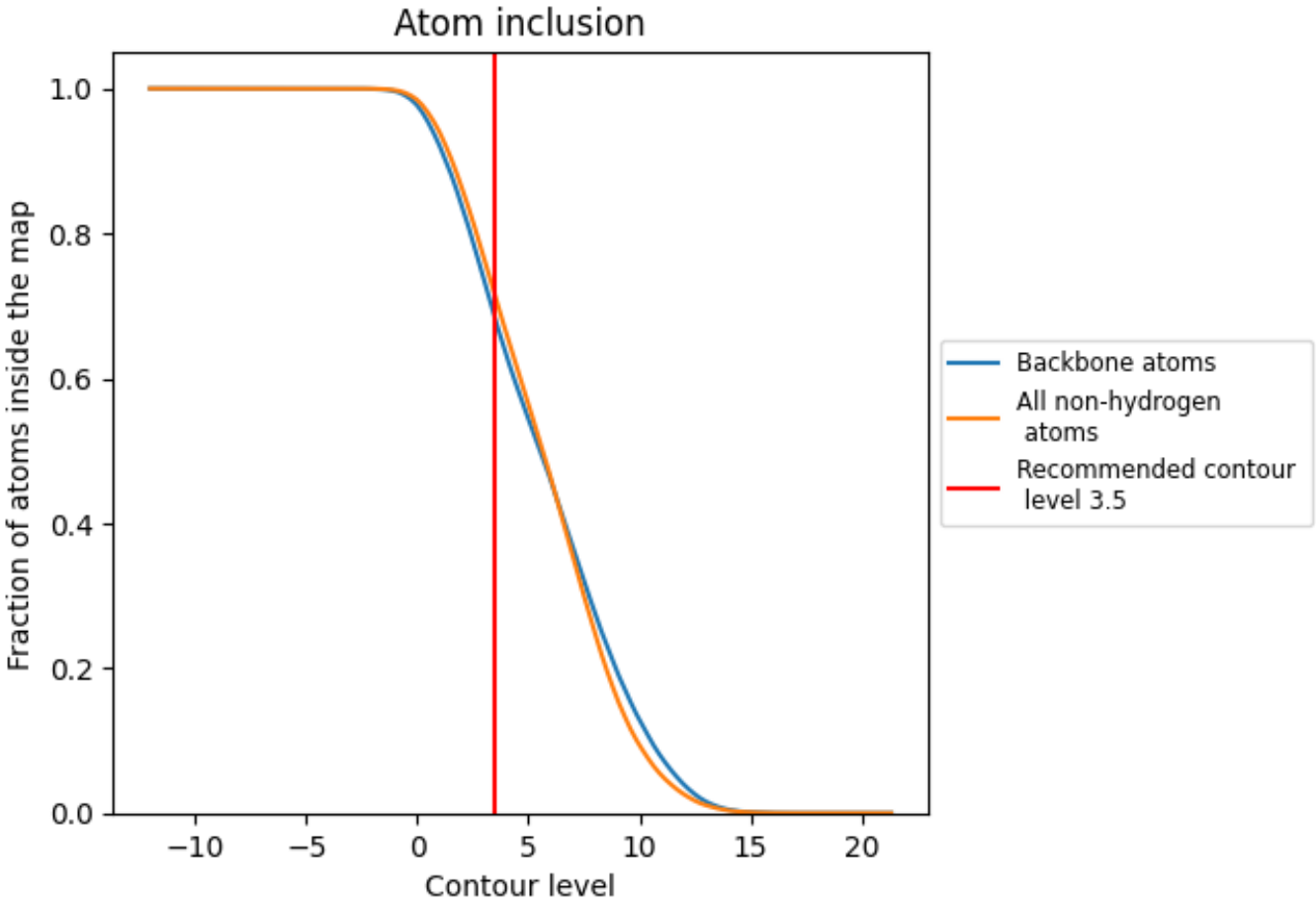
9.3 Atom inclusion mapped to coordinate model (i)



X Y Z

The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (3.5).

9.4 Atom inclusion (i)



At the recommended contour level, 68% of all backbone atoms, 71% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary

The table lists the average atom inclusion at the recommended contour level (3.5) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.7140	0.4500
14	0.8084	0.4760
22	0.7852	0.4560
34	0.8821	0.5110
44	0.8648	0.5010
A1	0.4286	0.3930
A2	0.6233	0.4220
A3	0.7558	0.4830
A5	0.7334	0.4970
A6	0.2618	0.3170
B2	0.6167	0.4110
B5	0.7061	0.4680
C2	0.6857	0.4660
C5	0.7065	0.4570
D2	0.5903	0.4120
D5	0.6312	0.4150
E2	0.6602	0.4450
E5	0.6231	0.4440
F2	0.5645	0.3700
F5	0.7108	0.4720
G2	0.5575	0.3830
G5	0.6174	0.4160
H2	0.4945	0.3310
H5	0.6450	0.4520
I2	0.6481	0.4210
I5	0.6571	0.4460
J2	0.6604	0.4440
J5	0.6082	0.3880
K2	0.5250	0.3470
K5	0.7196	0.4870
L2	0.6326	0.4520
L5	0.6821	0.4510
M2	0.0924	0.1650
M5	0.6524	0.4380
N2	0.6525	0.4290

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Chain	Atom inclusion	Q-score
N5	0.7616	0.5020
O2	0.6630	0.4420
P2	0.5151	0.3600
P5	0.6807	0.4310
Q2	0.6315	0.4090
Q5	0.7248	0.4750
R2	0.5772	0.3890
R5	0.6443	0.4420
S2	0.5544	0.3540
S5	0.6913	0.4670
T2	0.5813	0.3910
T5	0.7019	0.4680
U2	0.5101	0.3610
U5	0.5959	0.4020
V2	0.6039	0.3960
V5	0.6609	0.4760
W2	0.7094	0.4780
W5	0.4483	0.3500
X2	0.6682	0.4740
X5	0.6892	0.4780
X7	0.4981	0.4460
Y2	0.5998	0.4010
Y5	0.6756	0.4690
Z2	0.5887	0.4250
Z5	0.6387	0.4170
a2	0.6929	0.4500
a5	0.7022	0.4470
b2	0.6279	0.4240
b5	0.6623	0.4330
c2	0.6080	0.4490
c5	0.6525	0.4460
d2	0.7300	0.4580
d5	0.6655	0.4500
e2	0.5468	0.4060
e5	0.7141	0.5000
f2	0.2070	0.2050
f5	0.7457	0.5180
g2	0.5015	0.3710
g5	0.6843	0.4650
h5	0.6638	0.4510
i5	0.6040	0.3940
j5	0.7858	0.5090

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Chain	Atom inclusion	Q-score
k5	0.5943	0.4010
l5	0.7163	0.4750
m5	0.6781	0.4670
n5	0.7075	0.4820
o5	0.6514	0.4710
p5	0.6493	0.4480