Full wwPDB EM Validation Report ⓘ

Dec 17, 2022 – 09:14 pm GMT

PDB ID	:	6ZN5
EMDB ID	:	EMD-11310
Title	:	SARS-CoV-2 Nsp1 bound to a pre-40S-like ribosome complex - state 2
Authors	:	Thoms, M.; Buschauer, R.; Ameismeier, M.; Denk, T.; Kratzat, H.; Mackens-Kiani, T.; Cheng, J.; Berninghausen, O.; Becker, T.; Beckmann, R.
Deposited on	:	2020-07-06
Resolution	:	3.20 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:

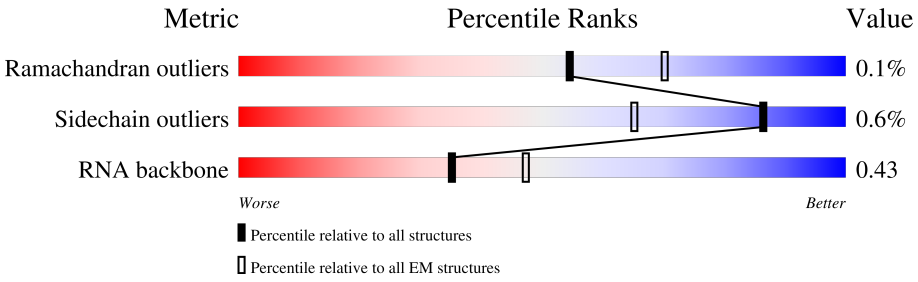
EMDB validation analysis	:	0.0.1.dev43
MolProbity	:	4.02b-467
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ	:	1.9.9
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.31.3

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 3.20 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	B	206	100%
2	C	213	17% 99%
3	D	218	99%
4	E	262	99%
5	F	225	7% 97%
6	G	230	6% 100%
7	H	186	5% 100%
8	I	205	99%

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Mol	Chain	Length	Quality of chain
9	J	180	98%
10	K	189	6% 98%
11	L	151	7% 99%
12	M	95	12% 99%
13	N	149	100%
14	O	123	64% 98%
15	P	135	21% 99%
16	Q	120	9% 100%
17	R	139	100%
18	S	132	97%
19	T	143	16% 100%
20	U	144	100%
21	V	101	9% 100%
22	W	129	98%
23	X	141	97%
24	Y	124	99%
25	Z	82	100%
26	a	72	15% 100%
27	b	82	99%
28	c	101	32% 100%
29	d	61	8% 98%
30	e	56	14% 98%
31	f	54	96%
32	g	72	47% 99%
33	j	314	14% 100%

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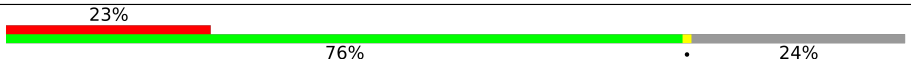
Mol	Chain	Length	Quality of chain
34	2	1868	
35	i	180	
36	u	804	

2 Entry composition

There are 37 unique types of molecules in this entry. The entry contains 79377 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 40S ribosomal protein SA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	B	206	1624	1035	287	294	8	0	0

- Molecule 2 is a protein called 40S ribosomal protein S3a.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	C	213	1729	1098	309	308	14	0	0

- Molecule 3 is a protein called 40S ribosomal protein S2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	D	218	1682	1090	289	293	10	0	0

- Molecule 4 is a protein called 40S ribosomal protein S4, X isoform.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	E	262	2076	1324	386	358	8	0	0

- Molecule 5 is a protein called 40S ribosomal protein S3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	F	225	1748	1115	315	311	7	0	0

- Molecule 6 is a protein called 40S ribosomal protein S6.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	G	230	1862	1164	371	320	7	0	0

- Molecule 7 is a protein called 40S ribosomal protein S7.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	H	186	Total	C	N	O	S	0	0
			1501	957	276	267	1		

- Molecule 8 is a protein called 40S ribosomal protein S8.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	I	205	Total	C	N	O	S	0	0
			1682	1056	331	290	5		

- Molecule 9 is a protein called 40S ribosomal protein S9.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	J	180	Total	C	N	O	S	0	0
			1499	955	300	242	2		

- Molecule 10 is a protein called 40S ribosomal protein S5.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	K	189	Total	C	N	O	S	0	0
			1495	934	284	270	7		

- Molecule 11 is a protein called 40S ribosomal protein S11.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	L	151	Total	C	N	O	S	0	0
			1229	782	230	211	6		

- Molecule 12 is a protein called 40S ribosomal protein S10.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	M	95	Total	C	N	O	S	0	0
			800	522	142	131	5		

- Molecule 13 is a protein called 40S ribosomal protein S13.

Mol	Chain	Residues	Atoms					AltConf	Trace
13	N	149	Total	C	N	O	S	0	0
			1202	770	228	203	1		

- Molecule 14 is a protein called 40S ribosomal protein S12.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	O	123	Total	C	N	O	S	0	0
			953	598	169	177	9		

- Molecule 15 is a protein called 40S ribosomal protein S14.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	P	135	Total	C	N	O	S	0	0
			1006	616	198	186	6		

- Molecule 16 is a protein called 40S ribosomal protein S15.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	Q	120	Total	C	N	O	S	0	0
			984	625	184	168	7		

- Molecule 17 is a protein called 40S ribosomal protein S16.

Mol	Chain	Residues	Atoms					AltConf	Trace
17	R	139	Total	C	N	O	S	0	0
			1109	704	210	192	3		

- Molecule 18 is a protein called 40S ribosomal protein S17.

Mol	Chain	Residues	Atoms					AltConf	Trace
18	S	132	Total	C	N	O	S	0	0
			1066	669	199	194	4		

- Molecule 19 is a protein called 40S ribosomal protein S18.

Mol	Chain	Residues	Atoms					AltConf	Trace
19	T	143	Total	C	N	O	S	0	0
			1184	743	240	200	1		

- Molecule 20 is a protein called 40S ribosomal protein S19.

Mol	Chain	Residues	Atoms					AltConf	Trace
20	U	144	Total	C	N	O	S	0	0
			1122	703	217	199	3		

- Molecule 21 is a protein called 40S ribosomal protein S20.

Mol	Chain	Residues	Atoms					AltConf	Trace
21	V	101	Total	C	N	O	S	0	0
			803	504	153	142	4		

- Molecule 22 is a protein called 40S ribosomal protein S15a.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	W	129	Total	C	N	O	S	0	0
			1034	659	193	176	6		

- Molecule 23 is a protein called 40S ribosomal protein S23.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	X	141	Total	C	N	O	S	0	0
			1098	693	219	183	3		

- Molecule 24 is a protein called 40S ribosomal protein S24.

Mol	Chain	Residues	Atoms					AltConf	Trace
24	Y	124	Total	C	N	O	S	0	0
			1014	641	198	170	5		

- Molecule 25 is a protein called 40S ribosomal protein S21.

Mol	Chain	Residues	Atoms					AltConf	Trace
25	Z	82	Total	C	N	O	S	0	0
			625	384	116	120	5		

- Molecule 26 is a protein called 40S ribosomal protein S25.

Mol	Chain	Residues	Atoms					AltConf	Trace
26	a	72	Total	C	N	O	S	0	0
			574	368	104	101	1		

- Molecule 27 is a protein called 40S ribosomal protein S27.

Mol	Chain	Residues	Atoms					AltConf	Trace
27	b	82	Total	C	N	O	S	0	0
			640	402	118	113	7		

- Molecule 28 is a protein called 40S ribosomal protein S26.

Mol	Chain	Residues	Atoms					AltConf	Trace
28	c	101	Total	C	N	O	S	0	0
			814	507	170	132	5		

- Molecule 29 is a protein called 40S ribosomal protein S28.

Mol	Chain	Residues	Atoms					AltConf	Trace
29	d	61	Total	C	N	O	S	0	0
			479	292	95	90	2		

- Molecule 30 is a protein called 40S ribosomal protein S30.

Mol	Chain	Residues	Atoms					AltConf	Trace
30	e	56	Total	C	N	O	S	0	0
			422	257	93	71	1		

- Molecule 31 is a protein called 40S ribosomal protein S29.

Mol	Chain	Residues	Atoms					AltConf	Trace
31	f	54	Total	C	N	O	S	0	0
			455	284	93	73	5		

- Molecule 32 is a protein called Ribosomal protein S27a.

Mol	Chain	Residues	Atoms					AltConf	Trace
32	g	72	Total	C	N	O	S	0	0
			553	346	106	94	7		

- Molecule 33 is a protein called Receptor of activated protein C kinase 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
33	j	314	Total	C	N	O	S	0	0
			2440	1537	425	466	12		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
34	2	1671	Total	C	N	O	P	0	0
			35677	15925	6406	11675	1671		

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
2	1772	C	G	conflict	GB 337376

- Molecule 35 is a protein called Non-structural protein 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
35	i	29	Total	C	N	O	S	0	0
			239	145	43	50	1		

- Molecule 36 is a protein called Pre-rRNA-processing protein TSR1 homolog.

Mol	Chain	Residues	Atoms					AltConf	Trace
36	u	615	Total	C	N	O	S	0	0
			4954	3179	885	866	24		

- Molecule 37 is ZINC ION (three-letter code: ZN) (formula: Zn).

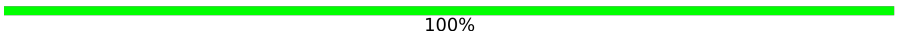
Mol	Chain	Residues	Atoms		AltConf
37	c	1	Total	Zn	0
			1	1	
37	f	1	Total	Zn	0
			1	1	
37	g	1	Total	Zn	0
			1	1	

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: 40S ribosomal protein SA

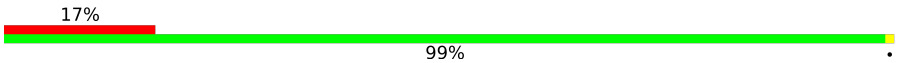
Chain B:

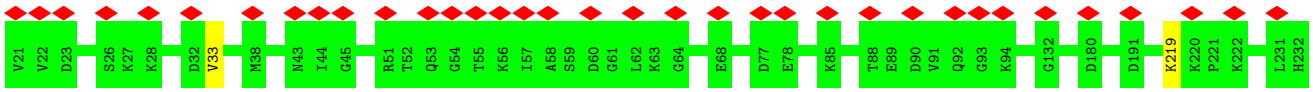


There are no outlier residues recorded for this chain.

- Molecule 2: 40S ribosomal protein S3a

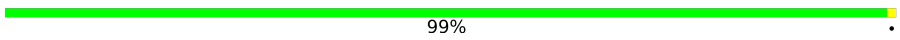
Chain C:





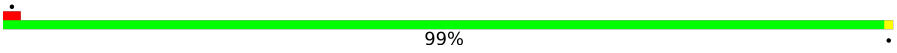
- Molecule 3: 40S ribosomal protein S2

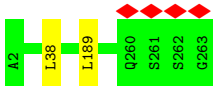
Chain D:



- Molecule 4: 40S ribosomal protein S4, X isoform

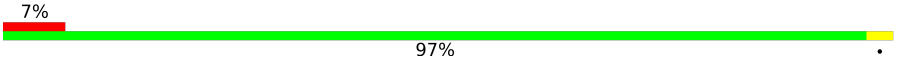
Chain E:

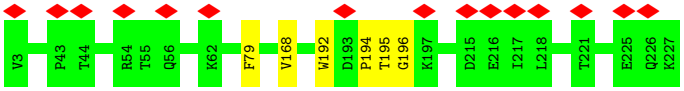




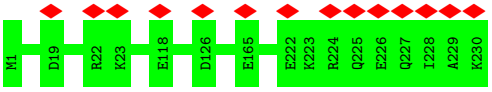
- Molecule 5: 40S ribosomal protein S3

Chain F:

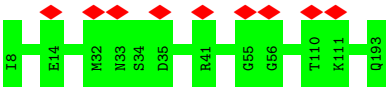




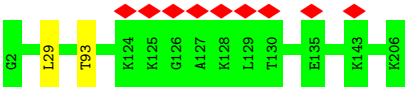
• Molecule 6: 40S ribosomal protein S6



• Molecule 7: 40S ribosomal protein S7

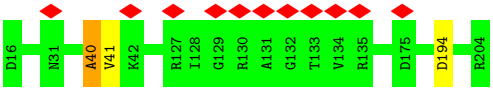


• Molecule 8: 40S ribosomal protein S8

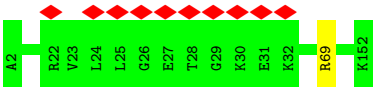


• Molecule 9: 40S ribosomal protein S9

• Molecule 10: 40S ribosomal protein S5

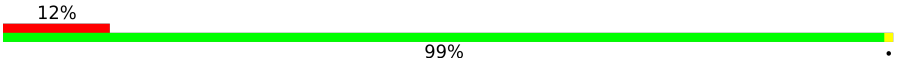


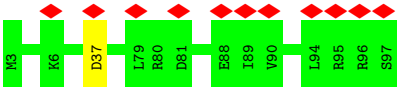
• Molecule 11: 40S ribosomal protein S11



• Molecule 12: 40S ribosomal protein S10

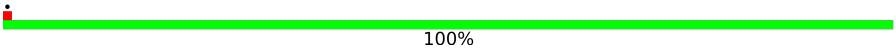
Chain M:

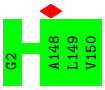




• Molecule 13: 40S ribosomal protein S13

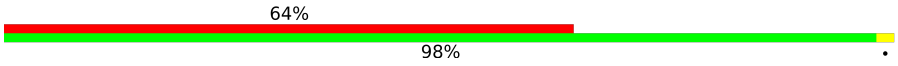
Chain N:

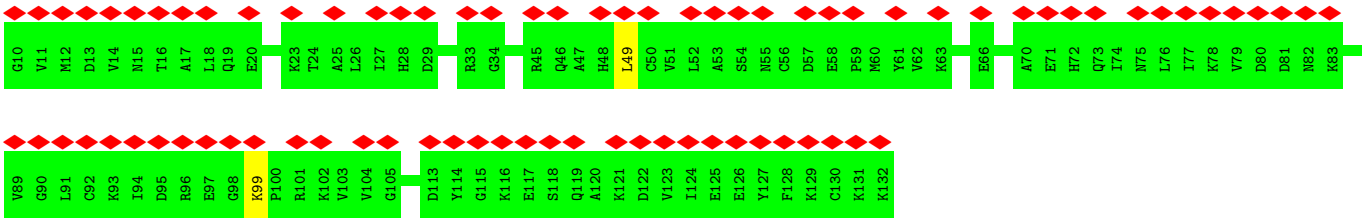




• Molecule 14: 40S ribosomal protein S12

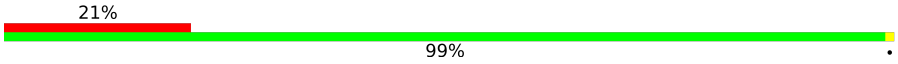
Chain O:

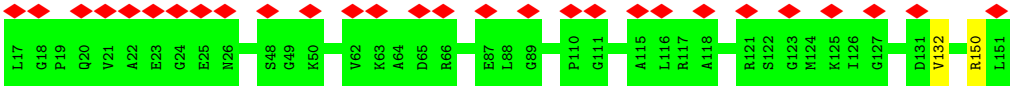




• Molecule 15: 40S ribosomal protein S14

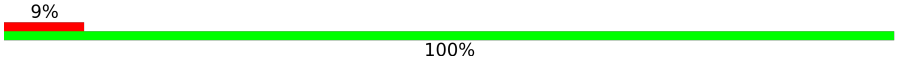
Chain P:

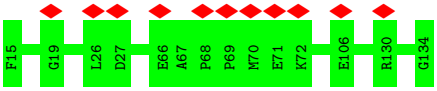




• Molecule 16: 40S ribosomal protein S15

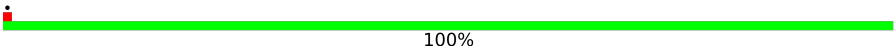
Chain Q:

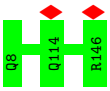




• Molecule 17: 40S ribosomal protein S16

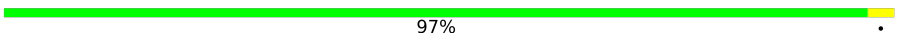
Chain R:

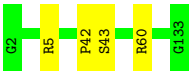




• Molecule 18: 40S ribosomal protein S17

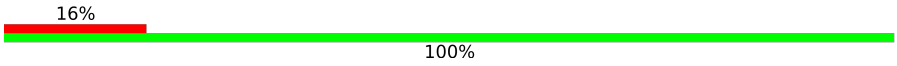
Chain S:

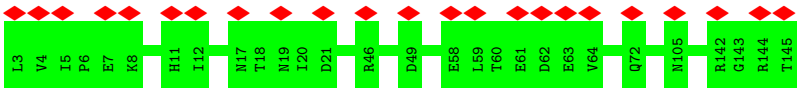




• Molecule 19: 40S ribosomal protein S18

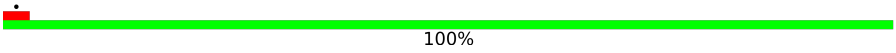
Chain T:

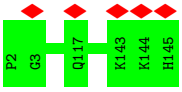




• Molecule 20: 40S ribosomal protein S19

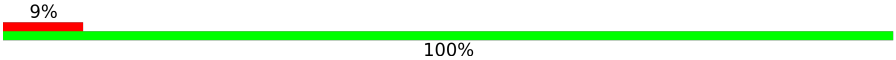
Chain U:

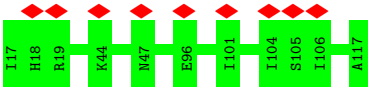




• Molecule 21: 40S ribosomal protein S20

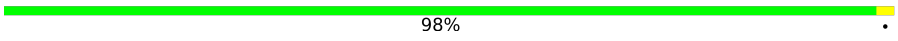
Chain V:

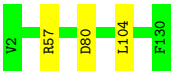




• Molecule 22: 40S ribosomal protein S15a

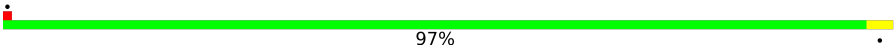
Chain W:

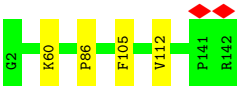




• Molecule 23: 40S ribosomal protein S23

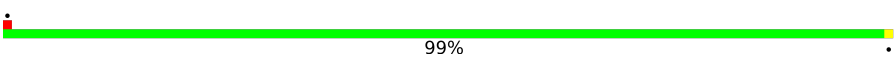
Chain X:

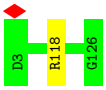




• Molecule 24: 40S ribosomal protein S24

Chain Y:





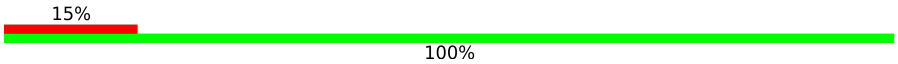
• Molecule 25: 40S ribosomal protein S21

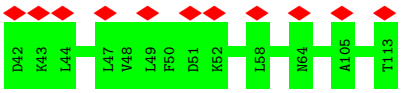
Chain Z:

There are no outlier residues recorded for this chain.

• Molecule 26: 40S ribosomal protein S25

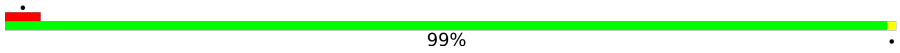
Chain a:

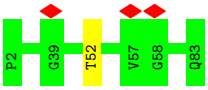




• Molecule 27: 40S ribosomal protein S27

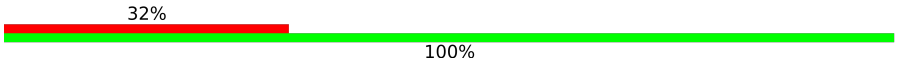
Chain b:

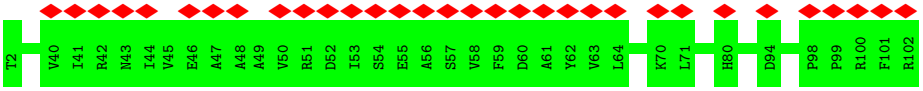




• Molecule 28: 40S ribosomal protein S26

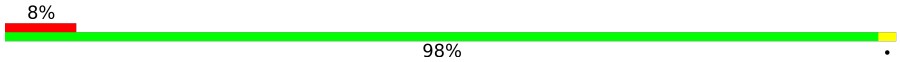
Chain c:

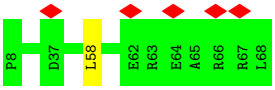




• Molecule 29: 40S ribosomal protein S28

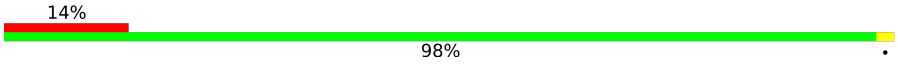
Chain d:

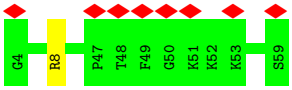




• Molecule 30: 40S ribosomal protein S30

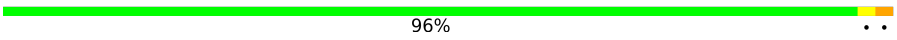
Chain e:

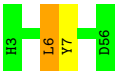




• Molecule 31: 40S ribosomal protein S29

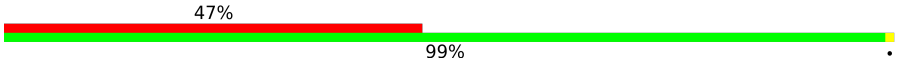
Chain f:

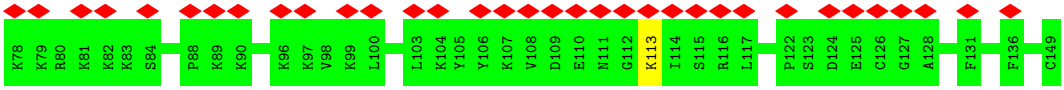




• Molecule 32: Ribosomal protein S27a

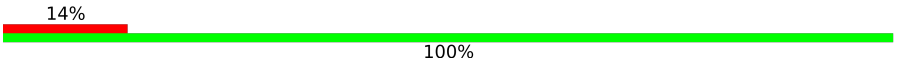
Chain g:

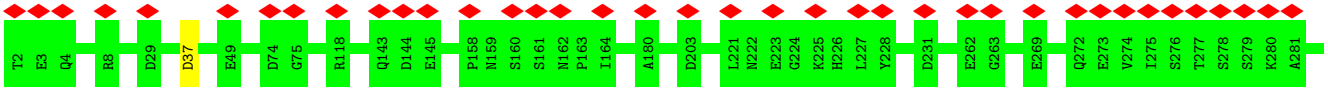


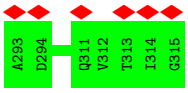


• Molecule 33: Receptor of activated protein C kinase 1

Chain j:

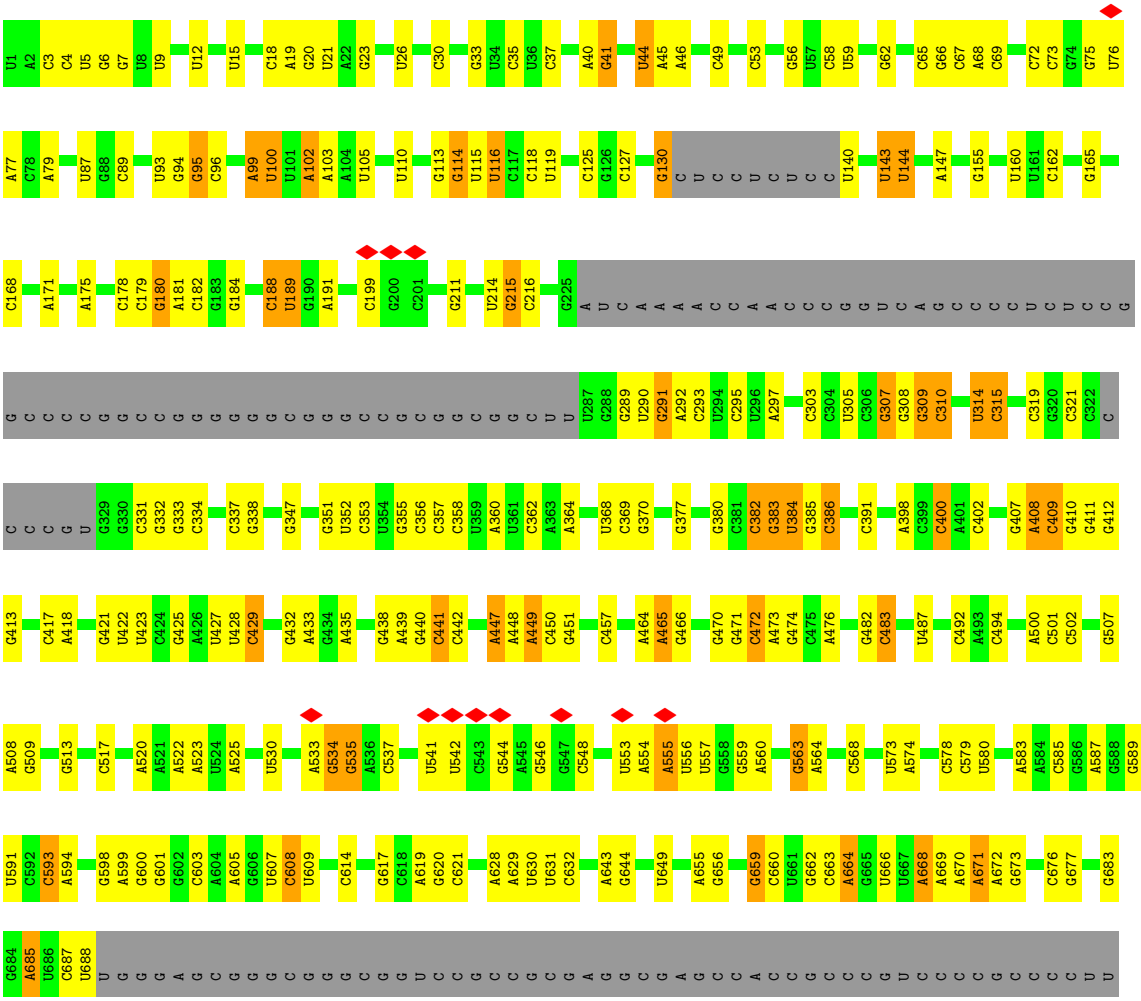


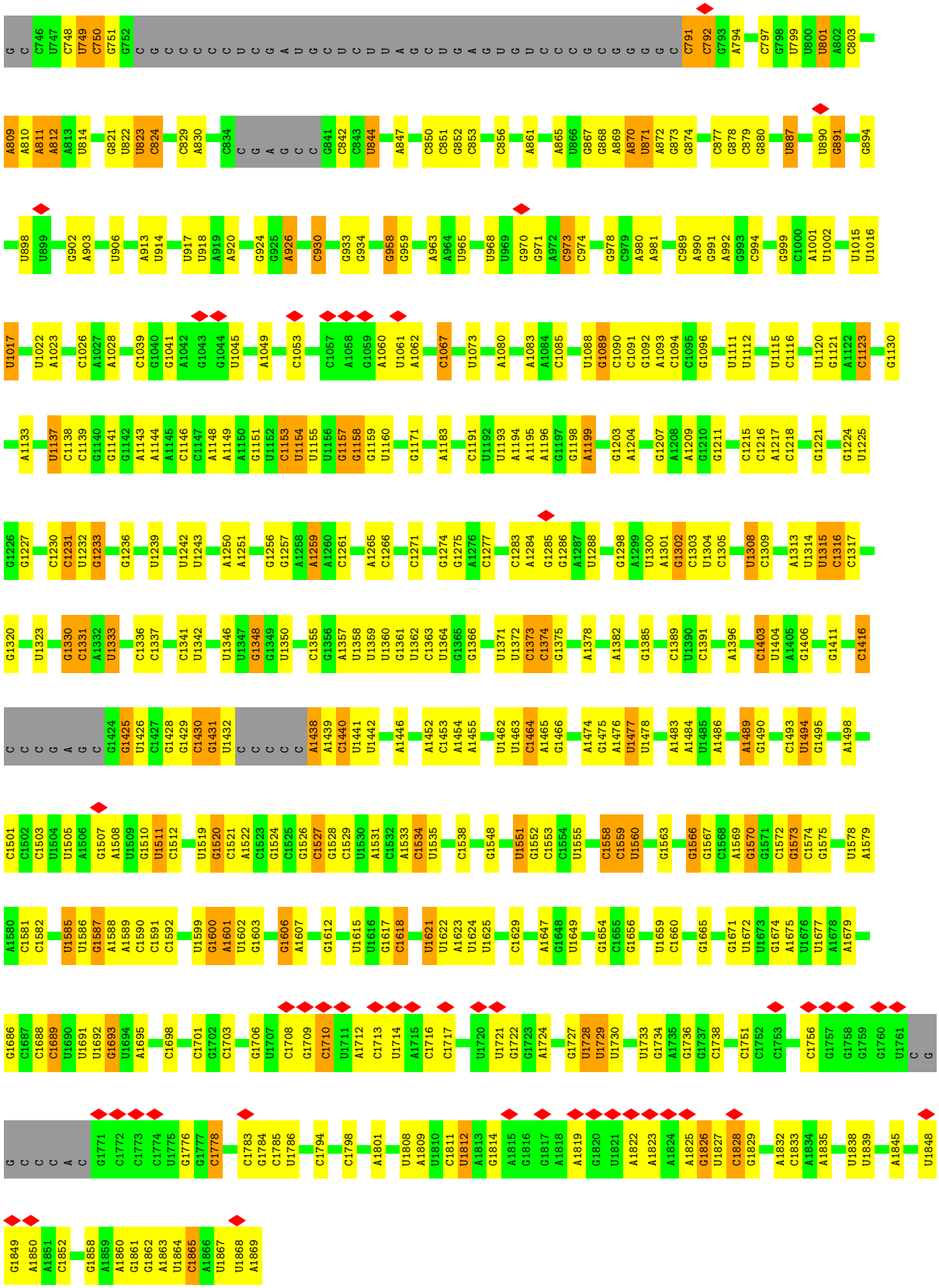




• Molecule 34: 18S ribosomal RNA

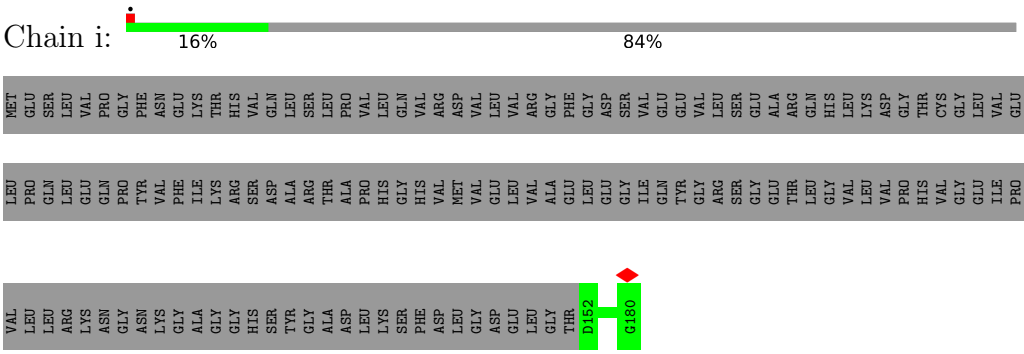
Chain 2:





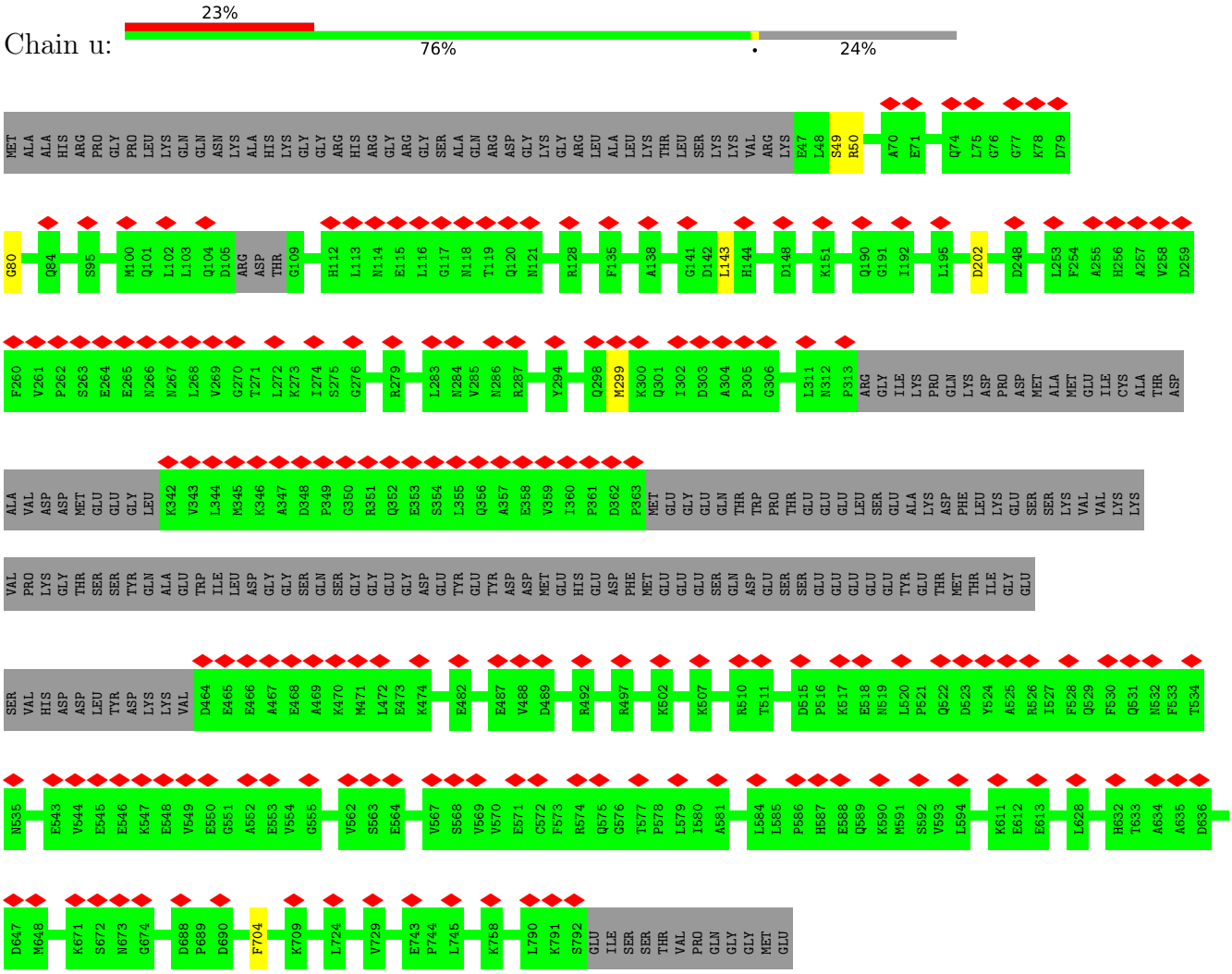
• Molecule 35: Non-structural protein 1

Chain i:



• Molecule 36: Pre-rRNA-processing protein TSR1 homolog

Chain u:



4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	20087	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	44.8	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	0.503	Depositor
Minimum map value	-0.247	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.011	Depositor
Recommended contour level	0.038	Depositor
Map size (Å)	381.24, 381.24, 381.24	wwPDB
Map dimensions	360, 360, 360	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.059, 1.059, 1.059	Depositor

5 Model quality (i)

5.1 Standard geometry (i)

Bond lengths and bond angles in the following residue types are not validated in this section: ZN

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	B	0.64	0/1661	0.64	0/2259
2	C	0.37	0/1756	0.58	0/2350
3	D	0.74	0/1718	0.68	1/2322 (0.0%)
4	E	0.64	0/2118	0.66	2/2849 (0.1%)
5	F	0.55	1/1776 (0.1%)	0.64	1/2392 (0.0%)
6	G	0.45	0/1885	0.54	0/2510
7	H	0.45	0/1524	0.60	0/2042
8	I	0.59	0/1711	0.60	1/2282 (0.0%)
9	J	0.72	0/1524	0.67	1/2035 (0.0%)
10	K	0.44	0/1516	0.56	0/2037
11	L	0.73	0/1250	0.63	0/1673
12	M	0.48	0/824	0.64	1/1112 (0.1%)
13	N	0.52	0/1226	0.53	0/1649
14	O	0.30	0/963	0.62	1/1291 (0.1%)
15	P	0.35	0/1019	0.56	0/1367
16	Q	0.42	0/1003	0.56	0/1341
17	R	0.56	0/1126	0.61	0/1506
18	S	0.47	0/1080	0.60	0/1449
19	T	0.41	0/1202	0.62	0/1610
20	U	0.49	0/1142	0.56	0/1530
21	V	0.54	0/813	0.58	0/1092
22	W	0.81	0/1051	0.76	1/1406 (0.1%)
23	X	0.72	0/1116	0.66	0/1490
24	Y	0.57	0/1031	0.59	0/1370
25	Z	0.62	0/631	0.65	0/844
26	a	0.34	0/580	0.63	0/780
27	b	0.52	0/653	0.63	0/876
28	c	0.40	0/828	0.53	0/1109
29	d	0.44	0/481	0.59	0/643
30	e	0.56	0/426	0.72	0/563
31	f	0.74	0/466	0.73	0/618
32	g	0.30	0/563	0.63	0/750

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
33	j	0.35	0/2497	0.59	0/3399
34	2	1.32	66/39894 (0.2%)	1.38	583/62170 (0.9%)
35	i	0.70	0/244	0.62	0/328
36	u	0.33	0/5076	0.60	1/6860 (0.0%)
All	All	0.98	67/84374 (0.1%)	1.08	593/121904 (0.5%)

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
5	F	0	3
10	K	0	1
18	S	0	2
23	X	0	2
24	Y	0	1
27	b	0	1
31	f	0	1
36	u	0	1
All	All	0	12

All (67) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
34	2	619	A	N9-C4	-8.23	1.32	1.37
34	2	659	G	C8-N7	-6.67	1.26	1.30
34	2	99	A	N7-C5	-6.64	1.35	1.39
34	2	1357	A	N9-C4	-6.50	1.33	1.37
34	2	7	G	C5-C4	-6.20	1.34	1.38
34	2	447	A	N7-C5	-6.13	1.35	1.39
34	2	94	G	C8-N7	-6.05	1.27	1.30
34	2	1159	G	C5-C4	-5.95	1.34	1.38
34	2	20	G	C2-N3	-5.88	1.28	1.32
34	2	432	G	C8-N7	-5.83	1.27	1.30
34	2	1089	G	C5-C4	-5.80	1.34	1.38
34	2	1158	G	C5-C4	-5.78	1.34	1.38
34	2	408	A	N9-C4	-5.71	1.34	1.37
34	2	410	G	C8-N7	-5.68	1.27	1.30
34	2	18	C	N3-C4	-5.65	1.29	1.33
34	2	1139	C	N3-C4	-5.58	1.30	1.33
34	2	20	G	N9-C8	-5.58	1.33	1.37

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
34	2	20	G	N1-C2	-5.52	1.33	1.37
34	2	30	C	N3-C4	-5.51	1.30	1.33
34	2	1198	G	N7-C5	-5.47	1.35	1.39
34	2	449	A	N9-C8	-5.44	1.33	1.37
34	2	513	G	C5-C4	-5.43	1.34	1.38
34	2	1361	G	C5-C4	-5.40	1.34	1.38
34	2	96	C	N1-C6	-5.37	1.33	1.37
34	2	41	G	C5-C4	-5.36	1.34	1.38
34	2	670	A	N7-C5	-5.33	1.36	1.39
34	2	358	C	C4-C5	-5.32	1.38	1.43
34	2	1199	A	N3-C4	-5.31	1.31	1.34
34	2	95	G	C8-N7	-5.30	1.27	1.30
34	2	662	G	C6-N1	-5.30	1.35	1.39
34	2	620	G	N7-C5	-5.29	1.36	1.39
34	2	668	A	N9-C4	-5.29	1.34	1.37
34	2	409	C	C4-C5	-5.28	1.38	1.43
34	2	601	G	C5-C4	-5.28	1.34	1.38
34	2	671	A	N9-C4	-5.27	1.34	1.37
34	2	409	C	N3-C4	-5.27	1.30	1.33
34	2	6	G	N7-C5	-5.27	1.36	1.39
34	2	425	G	C5-C4	-5.26	1.34	1.38
34	2	1093	A	C5-C4	-5.26	1.35	1.38
34	2	522	A	N9-C4	-5.25	1.34	1.37
34	2	829	C	N1-C6	-5.25	1.33	1.37
34	2	432	G	N9-C8	-5.25	1.34	1.37
34	2	410	G	C6-N1	-5.24	1.35	1.39
34	2	659	G	N7-C5	-5.21	1.36	1.39
34	2	6	G	C8-N7	-5.20	1.27	1.30
34	2	520	A	C5-C4	-5.20	1.35	1.38
34	2	1359	U	C2-N3	-5.20	1.34	1.37
34	2	442	C	N1-C6	-5.19	1.34	1.37
34	2	1486	A	N7-C5	-5.19	1.36	1.39
34	2	1360	U	C2-N3	-5.19	1.34	1.37
34	2	447	A	C5-C4	-5.18	1.35	1.38
34	2	383	G	N7-C5	-5.18	1.36	1.39
34	2	347	G	N7-C5	-5.17	1.36	1.39
5	F	168	VAL	CB-CG1	-5.17	1.42	1.52
34	2	411	G	N1-C2	-5.17	1.33	1.37
34	2	433	A	N9-C4	-5.14	1.34	1.37
34	2	1203	G	N7-C5	-5.14	1.36	1.39
34	2	20	G	C5-C4	-5.11	1.34	1.38
34	2	412	G	C5-C4	-5.10	1.34	1.38

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
34	2	355	G	C6-N1	-5.10	1.35	1.39
34	2	432	G	C5-C4	-5.07	1.34	1.38
34	2	1333	U	C2-N3	-5.05	1.34	1.37
34	2	1350	U	C2-N3	-5.05	1.34	1.37
34	2	451	G	C8-N7	-5.04	1.27	1.30
34	2	812	A	C5-C4	-5.03	1.35	1.38
34	2	95	G	C5-C4	-5.02	1.34	1.38
34	2	413	G	N7-C5	-5.02	1.36	1.39

All (593) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
34	2	501	C	N1-C2-O2	15.81	128.39	118.90
34	2	501	C	C2-N1-C1'	14.44	134.69	118.80
34	2	1453	C	N1-C2-O2	12.08	126.15	118.90
34	2	1868	U	N1-C2-O2	11.86	131.10	122.80
34	2	501	C	C6-N1-C1'	-11.84	106.60	120.80
34	2	293	C	N1-C2-O2	11.68	125.91	118.90
34	2	501	C	N3-C2-O2	-11.49	113.86	121.90
34	2	293	C	C2-N1-C1'	11.01	130.91	118.80
34	2	356	C	N1-C2-O2	10.84	125.40	118.90
34	2	1868	U	C2-N1-C1'	10.82	130.68	117.70
34	2	853	C	N3-C2-O2	-10.73	114.39	121.90
34	2	1624	U	N3-C2-O2	-10.69	114.72	122.20
34	2	1868	U	N3-C2-O2	-10.67	114.73	122.20
34	2	1016	U	N3-C2-O2	-10.56	114.80	122.20
34	2	356	C	C2-N1-C1'	10.28	130.11	118.80
34	2	1362	U	N3-C2-O2	-9.91	115.26	122.20
34	2	1751	C	C2-N1-C1'	9.81	129.59	118.80
34	2	1553	C	C2-N1-C1'	9.81	129.59	118.80
34	2	293	C	N3-C2-O2	-9.79	115.05	121.90
34	2	1618	C	N1-C2-O2	9.54	124.62	118.90
34	2	1373	C	C6-N1-C2	-9.50	116.50	120.30
34	2	35	C	C6-N1-C2	-9.49	116.50	120.30
34	2	1618	C	C2-N1-C1'	9.46	129.21	118.80
34	2	1477	U	N1-C2-O2	9.45	129.41	122.80
34	2	750	C	N1-C2-O2	9.43	124.56	118.90
34	2	382	C	C6-N1-C2	-9.42	116.53	120.30
34	2	1016	U	C2-N1-C1'	9.41	129.00	117.70
34	2	409	C	C6-N1-C2	-9.33	116.57	120.30
34	2	314	U	N3-C2-O2	-9.32	115.67	122.20
34	2	1453	C	C2-N1-C1'	9.32	129.05	118.80

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
34	2	853	C	C2-N1-C1'	9.25	128.97	118.80
34	2	632	C	C6-N1-C2	-9.23	116.61	120.30
34	2	853	C	N1-C2-O2	9.16	124.40	118.90
34	2	630	U	C2-N1-C1'	9.13	128.66	117.70
34	2	4	C	C6-N1-C2	-9.13	116.65	120.30
34	2	179	C	N1-C2-O2	9.12	124.37	118.90
34	2	1621	U	C2-N1-C1'	9.11	128.63	117.70
34	2	853	C	C6-N1-C2	-9.10	116.66	120.30
34	2	1520	G	C4-N9-C1'	9.08	138.31	126.50
34	2	844	U	N3-C2-O2	-8.95	115.94	122.20
34	2	1314	U	C2-N1-C1'	8.94	128.43	117.70
34	2	1153	C	C2-N1-C1'	8.91	128.60	118.80
34	2	1153	C	C6-N1-C2	-8.81	116.78	120.30
34	2	1016	U	N1-C2-O2	8.80	128.96	122.80
34	2	1139	C	N3-C2-O2	-8.75	115.77	121.90
34	2	1337	C	C6-N1-C2	-8.73	116.81	120.30
34	2	356	C	N3-C2-O2	-8.72	115.80	121.90
34	2	632	C	C2-N1-C1'	8.67	128.34	118.80
34	2	632	C	C5-C6-N1	8.62	125.31	121.00
34	2	824	C	N3-C2-O2	-8.37	116.04	121.90
34	2	1751	C	N1-C2-O2	8.37	123.92	118.90
34	2	1139	C	C2-N1-C1'	8.31	127.95	118.80
34	2	1477	U	N3-C2-O2	-8.27	116.41	122.20
34	2	1520	G	C8-N9-C1'	-8.25	116.28	127.00
34	2	1590	C	C6-N1-C2	-8.23	117.01	120.30
34	2	293	C	C6-N1-C2	-8.22	117.01	120.30
34	2	871	U	O5'-P-OP2	8.19	120.52	110.70
34	2	1453	C	N3-C2-O2	-8.17	116.18	121.90
34	2	1216	C	C5-C6-N1	8.16	125.08	121.00
34	2	427	U	N3-C2-O2	-8.13	116.51	122.20
34	2	1022	U	C2-N1-C1'	8.13	127.45	117.70
34	2	965	U	N3-C2-O2	-8.11	116.53	122.20
34	2	1261	C	N3-C2-O2	-8.03	116.28	121.90
34	2	823	U	N3-C2-O2	-7.96	116.63	122.20
34	2	1362	U	C2-N1-C1'	7.95	127.24	117.70
34	2	1618	C	N3-C2-O2	-7.95	116.33	121.90
34	2	1350	U	N3-C2-O2	-7.92	116.65	122.20
34	2	1624	U	N1-C2-O2	7.91	128.34	122.80
34	2	1139	C	N1-C2-O2	7.89	123.63	118.90
34	2	824	C	N1-C2-O2	7.88	123.63	118.90
34	2	1261	C	N1-C2-O2	7.87	123.62	118.90
34	2	1503	C	C6-N1-C2	-7.83	117.17	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
34	2	659	G	C8-N9-C1'	-7.82	116.84	127.00
34	2	382	C	C5-C6-N1	7.80	124.90	121.00
34	2	1389	C	C6-N1-C2	-7.80	117.18	120.30
34	2	427	U	C2-N1-C1'	7.67	126.90	117.70
34	2	1622	U	C5-C6-N1	7.64	126.52	122.70
34	2	1689	C	C5-C6-N1	7.60	124.80	121.00
22	W	104	LEU	CA-CB-CG	7.59	132.76	115.30
34	2	801	U	N3-C2-O2	-7.57	116.90	122.20
34	2	1566	G	O5'-P-OP1	7.54	119.74	110.70
34	2	1624	U	C2-N1-C1'	7.52	126.72	117.70
34	2	1146	C	C6-N1-C2	-7.50	117.30	120.30
34	2	1015	U	C2-N3-C4	-7.49	122.51	127.00
34	2	1553	C	N1-C2-O2	7.47	123.38	118.90
34	2	1416	C	C5-C6-N1	7.47	124.73	121.00
34	2	1591	C	N1-C2-O2	7.46	123.38	118.90
34	2	1691	U	N1-C2-O2	7.44	128.01	122.80
34	2	1073	U	N3-C2-O2	-7.43	117.00	122.20
34	2	659	G	C4-N9-C1'	7.43	136.16	126.50
34	2	1233	G	C6-C5-N7	-7.40	125.96	130.40
34	2	179	C	N3-C2-O2	-7.39	116.72	121.90
34	2	1416	C	C2-N1-C1'	7.36	126.90	118.80
34	2	1868	U	C6-N1-C1'	-7.36	110.89	121.20
34	2	1621	U	N1-C2-O2	7.35	127.94	122.80
34	2	1216	C	N1-C2-O2	7.34	123.30	118.90
34	2	356	C	C6-N1-C1'	-7.33	112.00	120.80
34	2	1717	C	C6-N1-C2	-7.31	117.38	120.30
34	2	1867	U	N1-C2-O2	7.29	127.90	122.80
34	2	293	C	C6-N1-C1'	-7.27	112.08	120.80
34	2	168	C	C6-N1-C2	-7.25	117.40	120.30
34	2	856	C	N1-C2-O2	7.24	123.25	118.90
34	2	4	C	C5-C6-N1	7.23	124.62	121.00
34	2	926	A	C6-C5-N7	-7.23	127.24	132.30
34	2	21	U	N3-C2-O2	-7.23	117.14	122.20
34	2	1153	C	C5-C6-N1	7.19	124.60	121.00
34	2	1590	C	C5-C6-N1	7.19	124.60	121.00
34	2	1622	U	C2-N1-C1'	7.17	126.30	117.70
34	2	965	U	N1-C2-O2	7.15	127.81	122.80
34	2	1600	G	N3-C4-N9	7.12	130.27	126.00
34	2	1606	G	N3-C4-N9	-7.12	121.73	126.00
34	2	1336	C	N3-C2-O2	-7.11	116.92	121.90
34	2	1336	C	C6-N1-C2	-7.10	117.46	120.30
34	2	12	U	N3-C2-O2	-7.09	117.24	122.20

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
34	2	1403	C	P-O3'-C3'	7.07	128.19	119.70
34	2	663	C	C6-N1-C2	-7.07	117.47	120.30
34	2	1600	G	C4-N9-C1'	7.07	135.69	126.50
34	2	1618	C	C6-N1-C1'	-7.07	112.31	120.80
34	2	1453	C	C5-C6-N1	7.05	124.52	121.00
34	2	1323	U	N1-C2-O2	7.04	127.73	122.80
34	2	429	C	C6-N1-C2	-7.04	117.49	120.30
34	2	1751	C	C6-N1-C1'	-7.04	112.36	120.80
34	2	1216	C	C6-N1-C2	-7.03	117.49	120.30
34	2	811	A	P-O3'-C3'	7.02	128.12	119.70
34	2	1231	C	C6-N1-C2	-7.01	117.50	120.30
34	2	1017	U	N1-C2-O2	7.00	127.70	122.80
34	2	1494	U	P-O3'-C3'	6.99	128.09	119.70
34	2	1359	U	N3-C2-O2	-6.98	117.31	122.20
34	2	1477	U	C2-N1-C1'	6.97	126.06	117.70
34	2	630	U	N3-C2-O2	-6.93	117.35	122.20
34	2	750	C	C2-N1-C1'	6.93	126.43	118.80
34	2	1553	C	N3-C2-O2	-6.91	117.06	121.90
34	2	1600	G	N3-C4-C5	-6.90	125.15	128.60
34	2	422	U	N3-C2-O2	-6.90	117.37	122.20
34	2	809	A	C8-N9-C4	-6.90	103.04	105.80
34	2	391	C	C6-N1-C2	-6.89	117.54	120.30
34	2	494	C	N1-C2-O2	6.89	123.03	118.90
34	2	1022	U	N1-C2-O2	6.88	127.61	122.80
34	2	1090	C	C6-N1-C2	-6.87	117.55	120.30
34	2	1688	C	C6-N1-C2	-6.86	117.56	120.30
4	E	38	LEU	CA-CB-CG	6.85	131.05	115.30
34	2	750	C	C5-C6-N1	6.85	124.42	121.00
34	2	1391	C	C6-N1-C2	-6.84	117.56	120.30
34	2	1314	U	N1-C2-O2	6.84	127.59	122.80
34	2	1738	C	C6-N1-C2	-6.84	117.56	120.30
34	2	188	C	C2-N1-C1'	6.81	126.29	118.80
34	2	1733	U	N3-C2-O2	-6.80	117.44	122.20
34	2	856	C	N3-C2-O2	-6.79	117.15	121.90
34	2	1090	C	C5-C6-N1	6.79	124.40	121.00
34	2	179	C	C2-N1-C1'	6.79	126.27	118.80
34	2	1553	C	C6-N1-C1'	-6.77	112.68	120.80
34	2	1591	C	C6-N1-C2	-6.76	117.59	120.30
34	2	382	C	P-O3'-C3'	6.76	127.81	119.70
12	M	37	ASP	CB-CG-OD2	6.75	124.38	118.30
34	2	114	G	P-O3'-C3'	6.74	127.79	119.70
34	2	1374	C	C6-N1-C2	-6.73	117.61	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
34	2	1330	G	P-O3'-C3'	6.71	127.76	119.70
34	2	105	U	N3-C2-O2	-6.70	117.51	122.20
34	2	749	U	N1-C2-O2	6.70	127.49	122.80
34	2	1425	G	C4-N9-C1'	6.68	135.19	126.50
34	2	809	A	N7-C8-N9	6.68	117.14	113.80
34	2	1606	G	N3-C2-N2	-6.66	115.24	119.90
34	2	1607	A	N7-C8-N9	6.65	117.12	113.80
34	2	1865	C	C6-N1-C2	-6.65	117.64	120.30
34	2	168	C	N3-C2-O2	-6.65	117.25	121.90
34	2	1527	C	N3-C2-O2	-6.64	117.25	121.90
34	2	1111	U	C2-N1-C1'	6.63	125.66	117.70
34	2	441	C	C2-N1-C1'	6.62	126.08	118.80
34	2	520	A	N1-C2-N3	-6.62	125.99	129.30
34	2	1520	G	N3-C4-N9	6.62	129.97	126.00
34	2	1812	U	N3-C2-O2	-6.62	117.57	122.20
34	2	649	U	N3-C2-O2	-6.60	117.58	122.20
34	2	1304	U	N3-C2-O2	-6.59	117.59	122.20
34	2	1621	U	C5-C6-N1	6.58	125.99	122.70
34	2	1416	C	C6-N1-C2	-6.58	117.67	120.30
34	2	1710	C	N1-C2-O2	6.58	122.85	118.90
34	2	391	C	C2-N1-C1'	6.58	126.03	118.80
34	2	630	U	N1-C2-O2	6.58	127.40	122.80
34	2	1453	C	C6-N1-C1'	-6.57	112.92	120.80
34	2	1073	U	N1-C2-O2	6.56	127.39	122.80
34	2	409	C	C5-C6-N1	6.55	124.28	121.00
34	2	314	U	N1-C2-O2	6.55	127.39	122.80
34	2	1123	C	N1-C2-O2	6.55	122.83	118.90
34	2	1677	U	C5-C6-N1	6.55	125.97	122.70
34	2	293	C	C5-C6-N1	6.54	124.27	121.00
34	2	119	U	N3-C2-O2	-6.52	117.63	122.20
34	2	1304	U	C2-N1-C1'	6.52	125.53	117.70
34	2	310	C	C5-C6-N1	6.51	124.25	121.00
34	2	1566	G	O5'-P-OP2	-6.51	99.84	105.70
34	2	1374	C	C5-C6-N1	6.50	124.25	121.00
34	2	1553	C	C6-N1-C2	-6.50	117.70	120.30
34	2	1149	A	C2-N3-C4	6.49	113.84	110.60
34	2	1865	C	C2-N1-C1'	6.49	125.94	118.80
34	2	1233	G	N3-C4-N9	6.49	129.89	126.00
34	2	1233	G	C4-N9-C1'	6.48	134.92	126.50
34	2	1259	A	C4-C5-N7	6.47	113.94	110.70
34	2	1362	U	N1-C2-O2	6.46	127.33	122.80
34	2	608	C	C5-C6-N1	6.46	124.23	121.00

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
34	2	593	C	N1-C2-O2	6.46	122.77	118.90
34	2	102	A	P-O3'-C3'	6.45	127.44	119.70
34	2	1729	U	N1-C2-O2	6.45	127.32	122.80
34	2	1153	C	N1-C2-O2	6.43	122.76	118.90
34	2	1585	U	P-O3'-C3'	6.43	127.42	119.70
34	2	1111	U	N1-C2-O2	6.43	127.30	122.80
34	2	1157	G	N1-C6-O6	-6.41	116.05	119.90
34	2	1558	C	OP1-P-O3'	6.41	119.30	105.20
34	2	1660	C	C6-N1-C2	-6.41	117.74	120.30
34	2	1149	A	N1-C6-N6	-6.40	114.76	118.60
34	2	930	C	N1-C2-O2	6.40	122.74	118.90
34	2	402	C	C5-C6-N1	6.40	124.20	121.00
34	2	427	U	N1-C2-O2	6.39	127.28	122.80
34	2	1778	C	C2-N1-C1'	6.38	125.82	118.80
34	2	517	C	C6-N1-C2	-6.38	117.75	120.30
34	2	1308	U	P-O3'-C3'	6.37	127.35	119.70
34	2	926	A	N7-C8-N9	6.37	116.98	113.80
34	2	1453	C	C2-N3-C4	6.36	123.08	119.90
34	2	1337	C	N3-C4-C5	-6.35	119.36	121.90
34	2	441	C	C6-N1-C2	-6.35	117.76	120.30
34	2	1314	U	C6-N1-C1'	-6.35	112.31	121.20
34	2	856	C	C2-N1-C1'	6.33	125.77	118.80
34	2	535	G	O5'-P-OP1	6.33	118.30	110.70
34	2	1216	C	C2-N1-C1'	6.33	125.76	118.80
34	2	824	C	C6-N1-C2	-6.33	117.77	120.30
34	2	30	C	C6-N1-C2	-6.32	117.77	120.30
34	2	110	U	N3-C2-O2	-6.32	117.78	122.20
34	2	1464	C	P-O3'-C3'	6.31	127.27	119.70
34	2	508	A	N1-C6-N6	-6.30	114.82	118.60
34	2	1373	C	C5-C6-N1	6.30	124.15	121.00
34	2	1123	C	C2-N1-C1'	6.29	125.72	118.80
34	2	1017	U	N3-C2-O2	-6.28	117.80	122.20
34	2	1336	C	N1-C2-O2	6.27	122.66	118.90
34	2	1271	C	N1-C2-O2	6.27	122.66	118.90
34	2	1708	C	C6-N1-C2	-6.27	117.79	120.30
34	2	965	U	C2-N1-C1'	6.26	125.22	117.70
34	2	353	C	C6-N1-C2	-6.25	117.80	120.30
34	2	494	C	N3-C2-O2	-6.25	117.52	121.90
34	2	530	U	C2-N1-C1'	6.24	125.18	117.70
34	2	1590	C	N1-C2-O2	6.23	122.64	118.90
34	2	1621	U	N3-C2-O2	-6.21	117.85	122.20
34	2	1867	U	N3-C2-O2	-6.21	117.85	122.20

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
34	2	356	C	C6-N1-C2	-6.20	117.82	120.30
34	2	1729	U	N3-C2-O2	-6.20	117.86	122.20
34	2	926	A	N3-C4-N9	6.20	132.36	127.40
34	2	1625	U	C2-N1-C1'	6.20	125.14	117.70
34	2	1350	U	N1-C2-O2	6.19	127.14	122.80
34	2	1529	C	C5-C6-N1	6.19	124.09	121.00
34	2	1621	U	C6-N1-C1'	-6.18	112.55	121.20
34	2	1751	C	C5-C6-N1	6.16	124.08	121.00
34	2	630	U	C6-N1-C1'	-6.15	112.59	121.20
34	2	1812	U	N1-C2-O2	6.15	127.11	122.80
34	2	334	C	C6-N1-C2	-6.15	117.84	120.30
34	2	1261	C	C6-N1-C2	-6.15	117.84	120.30
34	2	1139	C	C6-N1-C2	-6.14	117.84	120.30
34	2	926	A	N9-C4-C5	-6.13	103.35	105.80
34	2	749	U	N3-C2-O2	-6.12	117.92	122.20
34	2	1112	U	N3-C2-O2	-6.12	117.92	122.20
34	2	1304	U	N1-C2-O2	6.11	127.08	122.80
34	2	926	A	C4-N9-C1'	6.11	137.29	126.30
34	2	1811	C	C5-C6-N1	6.10	124.05	121.00
34	2	402	C	C6-N1-C2	-6.10	117.86	120.30
34	2	1323	U	N3-C2-O2	-6.10	117.93	122.20
34	2	334	C	C2-N1-C1'	6.08	125.49	118.80
34	2	410	G	O5'-P-OP2	-6.08	100.23	105.70
34	2	130	G	N3-C4-C5	-6.06	125.57	128.60
34	2	809	A	O4'-C1'-N9	6.05	113.04	108.20
34	2	441	C	N1-C2-O2	6.03	122.52	118.90
34	2	457	C	N1-C2-O2	6.03	122.52	118.90
34	2	823	U	C2-N1-C1'	6.02	124.93	117.70
34	2	1607	A	C5-N7-C8	-6.02	100.89	103.90
34	2	1728	U	N3-C2-O2	-6.02	117.99	122.20
34	2	1751	C	C6-N1-C2	-6.02	117.89	120.30
34	2	1708	C	N1-C2-O2	5.99	122.50	118.90
34	2	1331	C	O5'-P-OP1	-5.99	100.31	105.70
34	2	1738	C	C5-C6-N1	5.98	123.99	121.00
34	2	1112	U	N1-C2-O2	5.98	126.99	122.80
34	2	861	A	N1-C6-N6	-5.97	115.02	118.60
34	2	750	C	N3-C2-O2	-5.96	117.72	121.90
34	2	1067	C	C2-N1-C1'	5.95	125.34	118.80
34	2	1527	C	N1-C2-O2	5.94	122.46	118.90
34	2	215	G	N3-C4-N9	5.94	129.56	126.00
34	2	1622	U	N1-C2-O2	5.93	126.95	122.80
34	2	1649	U	N3-C2-O2	-5.93	118.05	122.20

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
34	2	1111	U	N3-C2-O2	-5.93	118.05	122.20
34	2	18	C	C6-N1-C2	-5.92	117.93	120.30
34	2	429	C	O5'-P-OP1	-5.92	100.37	105.70
34	2	1039	C	C2-N1-C1'	5.91	125.30	118.80
34	2	1157	G	C8-N9-C4	-5.91	104.04	106.40
34	2	850	C	N1-C2-O2	5.91	122.44	118.90
34	2	309	G	N3-C4-C5	5.90	131.55	128.60
34	2	1591	C	N3-C2-O2	-5.90	117.77	121.90
34	2	1137	U	P-O3'-C3'	5.89	126.77	119.70
34	2	1691	U	C2-N1-C1'	5.89	124.77	117.70
34	2	1489	A	C8-N9-C4	-5.88	103.45	105.80
34	2	1600	G	C8-N9-C1'	-5.88	119.35	127.00
34	2	1713	C	C5-C6-N1	5.88	123.94	121.00
34	2	87	U	N3-C2-O2	-5.87	118.09	122.20
34	2	1438	A	P-O3'-C3'	5.87	126.74	119.70
34	2	918	U	C2-N1-C1'	5.87	124.74	117.70
34	2	1717	C	C5-C6-N1	5.87	123.93	121.00
34	2	1196	A	N1-C6-N6	-5.86	115.08	118.60
34	2	1709	G	N3-C4-N9	5.86	129.51	126.00
34	2	1591	C	C5-C6-N1	5.86	123.93	121.00
34	2	1865	C	N3-C2-O2	-5.86	117.80	121.90
34	2	1736	G	C8-N9-C4	-5.85	104.06	106.40
8	I	29	LEU	CA-CB-CG	5.84	128.74	115.30
34	2	1022	U	N3-C2-O2	-5.84	118.11	122.20
34	2	1660	C	C5-C6-N1	5.84	123.92	121.00
34	2	918	U	C5-C6-N1	5.83	125.62	122.70
34	2	1425	G	C8-N9-C1'	-5.83	119.42	127.00
34	2	1477	U	C5-C6-N1	5.83	125.61	122.70
34	2	102	A	O4'-C1'-N9	5.83	112.86	108.20
34	2	1527	C	C6-N1-C2	-5.82	117.97	120.30
34	2	1157	G	N9-C4-C5	5.82	107.73	105.40
34	2	1601	A	P-O3'-C3'	5.82	126.68	119.70
34	2	118	C	C6-N1-C2	-5.82	117.97	120.30
34	2	179	C	C6-N1-C2	-5.82	117.97	120.30
34	2	1191	C	C6-N1-C2	-5.81	117.97	120.30
34	2	803	C	C5-C6-N1	5.81	123.90	121.00
34	2	1026	C	C6-N1-C2	-5.80	117.98	120.30
34	2	621	C	C6-N1-C2	-5.80	117.98	120.30
34	2	1691	U	N3-C2-O2	-5.80	118.14	122.20
34	2	1649	U	N1-C2-O2	5.80	126.86	122.80
34	2	1016	U	C6-N1-C1'	-5.79	113.09	121.20
34	2	472	C	C6-N1-C2	-5.79	117.98	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
34	2	666	U	C2-N1-C1'	5.79	124.65	117.70
34	2	1346	U	N3-C2-O2	-5.79	118.15	122.20
34	2	53	C	C6-N1-C2	-5.79	117.98	120.30
34	2	580	U	N3-C2-O2	-5.79	118.15	122.20
34	2	1551	U	N3-C2-O2	-5.79	118.15	122.20
34	2	465	A	P-O3'-C3'	5.78	126.63	119.70
34	2	676	C	C6-N1-C2	-5.78	117.99	120.30
34	2	926	A	C4-C5-N7	5.77	113.59	110.70
34	2	1233	G	C8-N9-C1'	-5.77	119.50	127.00
34	2	1551	U	C2-N1-C1'	5.76	124.62	117.70
34	2	130	G	N3-C4-N9	5.76	129.46	126.00
34	2	1360	U	N3-C2-O2	-5.76	118.17	122.20
34	2	1425	G	P-O3'-C3'	5.75	126.60	119.70
34	2	314	U	C6-N1-C2	-5.75	117.55	121.00
34	2	472	C	C5-C6-N1	5.75	123.87	121.00
34	2	1154	U	N3-C2-O2	-5.74	118.18	122.20
34	2	801	U	C6-N1-C2	-5.73	117.56	121.00
34	2	410	G	N3-C4-N9	5.73	129.44	126.00
34	2	1453	C	C6-N1-C2	-5.73	118.01	120.30
34	2	930	C	N3-C2-O2	-5.73	117.89	121.90
34	2	619	A	C6-N1-C2	5.71	122.03	118.60
34	2	1848	U	C2-N1-C1'	5.70	124.54	117.70
34	2	180	G	P-O3'-C3'	5.70	126.54	119.70
34	2	1216	C	N3-C2-O2	-5.70	117.91	121.90
34	2	1146	C	C5-C6-N1	5.70	123.85	121.00
34	2	965	U	C6-N1-C2	-5.69	117.59	121.00
34	2	400	C	C6-N1-C2	-5.69	118.03	120.30
34	2	1389	C	C5-C6-N1	5.68	123.84	121.00
34	2	1848	U	N1-C2-O2	5.68	126.78	122.80
34	2	5	U	O5'-P-OP2	-5.68	100.59	105.70
34	2	812	A	O5'-P-OP2	-5.68	100.59	105.70
34	2	1501	C	C5-C6-N1	5.68	123.84	121.00
34	2	1153	C	N3-C2-O2	-5.67	117.93	121.90
34	2	973	C	N1-C2-O2	5.67	122.30	118.90
34	2	93	U	C6-N1-C2	-5.66	117.60	121.00
34	2	1729	U	C2-N1-C1'	5.66	124.49	117.70
34	2	687	C	N1-C2-O2	5.66	122.30	118.90
34	2	687	C	C2-N1-C1'	5.65	125.02	118.80
34	2	1314	U	N3-C2-O2	-5.65	118.24	122.20
34	2	1323	U	C2-N1-C1'	5.65	124.48	117.70
34	2	384	U	N3-C2-O2	-5.65	118.25	122.20
34	2	1503	C	C5-C6-N1	5.65	123.82	121.00

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
34	2	1848	U	N3-C2-O2	-5.64	118.25	122.20
34	2	534	G	P-O3'-C3'	5.64	126.47	119.70
34	2	102	A	C8-N9-C4	-5.64	103.55	105.80
34	2	1139	C	C6-N1-C1'	-5.63	114.04	120.80
34	2	1002	U	C5-C6-N1	5.63	125.52	122.70
34	2	1600	G	C2-N3-C4	5.63	114.72	111.90
5	F	196	GLY	C-N-CA	5.63	135.76	121.70
34	2	1527	C	C2-N1-C1'	5.63	124.99	118.80
34	2	1302	G	P-O3'-C3'	5.61	126.44	119.70
34	2	664	A	N1-C2-N3	-5.60	126.50	129.30
34	2	130	G	C4-N9-C1'	5.60	133.78	126.50
34	2	337	C	C6-N1-C2	-5.59	118.06	120.30
34	2	1590	C	N3-C2-O2	-5.58	117.99	121.90
34	2	579	C	C6-N1-C2	-5.58	118.07	120.30
34	2	1625	U	N3-C2-O2	-5.58	118.29	122.20
34	2	578	C	N1-C2-O2	5.58	122.25	118.90
34	2	1713	C	C2-N1-C1'	5.57	124.93	118.80
34	2	435	A	C8-N9-C4	-5.57	103.57	105.80
34	2	1259	A	C2-N3-C4	5.56	113.38	110.60
34	2	1315	U	C2-N1-C1'	5.55	124.36	117.70
34	2	1022	U	C6-N1-C1'	-5.54	113.44	121.20
34	2	1389	C	N1-C2-O2	5.54	122.22	118.90
34	2	1520	G	N3-C4-C5	-5.54	125.83	128.60
4	E	189	LEU	CA-CB-CG	5.54	128.04	115.30
34	2	891	G	C4-N9-C1'	5.54	133.70	126.50
34	2	178	C	C2-N1-C1'	5.54	124.89	118.80
34	2	21	U	N1-C2-O2	5.53	126.67	122.80
34	2	1396	A	O4'-C1'-N9	5.52	112.62	108.20
34	2	812	A	C5-C6-N1	5.52	120.46	117.70
34	2	1123	C	N3-C2-O2	-5.52	118.04	121.90
34	2	1389	C	C2-N1-C1'	5.51	124.86	118.80
34	2	116	U	C5-C6-N1	5.51	125.46	122.70
34	2	1231	C	N3-C2-O2	-5.51	118.04	121.90
34	2	140	U	N1-C2-O2	5.51	126.66	122.80
34	2	382	C	C2'-C3'-O3'	5.50	122.51	113.70
34	2	303	C	N3-C2-O2	-5.50	118.05	121.90
34	2	1092	G	O5'-P-OP2	-5.50	100.75	105.70
34	2	803	C	C6-N1-C2	-5.48	118.11	120.30
34	2	850	C	N3-C2-O2	-5.48	118.06	121.90
34	2	1416	C	N1-C2-O2	5.48	122.19	118.90
34	2	40	A	O5'-P-OP1	-5.47	100.78	105.70
34	2	508	A	C5-C6-N1	5.47	120.44	117.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
34	2	1430	C	C5-C6-N1	5.47	123.73	121.00
34	2	842	C	C2-N1-C1'	5.47	124.81	118.80
34	2	441	C	C5-C6-N1	5.47	123.73	121.00
34	2	110	U	N1-C2-O2	5.46	126.62	122.80
34	2	1692	U	O4'-C1'-N1	5.46	112.56	108.20
34	2	1524	G	C6-C5-N7	-5.46	127.13	130.40
34	2	165	G	C4-N9-C1'	5.45	133.59	126.50
34	2	168	C	C2-N1-C1'	5.45	124.80	118.80
34	2	383	G	C8-N9-C4	-5.45	104.22	106.40
34	2	877	C	C5-C6-N1	5.45	123.72	121.00
34	2	178	C	N1-C2-O2	5.44	122.17	118.90
34	2	871	U	O5'-P-OP1	-5.44	100.80	105.70
34	2	307	G	O4'-C1'-N9	-5.44	103.85	108.20
34	2	1015	U	N3-C4-C5	5.44	117.86	114.60
34	2	1373	C	P-O3'-C3'	5.44	126.23	119.70
34	2	851	C	N3-C2-O2	-5.43	118.10	121.90
34	2	887	U	N3-C2-O2	-5.43	118.40	122.20
34	2	1094	C	C6-N1-C2	-5.43	118.13	120.30
34	2	1431	G	P-O3'-C3'	5.43	126.21	119.70
34	2	593	C	C2-N1-C1'	5.42	124.76	118.80
34	2	1560	U	N1-C2-O2	5.42	126.59	122.80
34	2	1811	C	N1-C2-O2	5.42	122.15	118.90
34	2	856	C	C6-N1-C2	-5.42	118.13	120.30
34	2	1559	C	C5-C6-N1	5.42	123.71	121.00
34	2	1811	C	C6-N1-C2	-5.42	118.13	120.30
34	2	140	U	C2-N1-C1'	5.41	124.19	117.70
34	2	19	A	N1-C6-N6	-5.41	115.35	118.60
34	2	1218	C	C6-N1-C2	-5.41	118.14	120.30
34	2	1160	U	N3-C2-O2	-5.41	118.42	122.20
34	2	1239	U	N3-C2-O2	-5.41	118.42	122.20
34	2	1812	U	C6-N1-C2	-5.40	117.76	121.00
34	2	1587	G	P-O3'-C3'	5.40	126.18	119.70
34	2	1330	G	N3-C4-C5	-5.40	125.90	128.60
34	2	1355	C	C6-N1-C2	-5.40	118.14	120.30
34	2	853	C	C6-N1-C1'	-5.39	114.33	120.80
34	2	1233	G	C4-C5-N7	5.39	112.96	110.80
34	2	119	U	C6-N1-C2	-5.39	117.76	121.00
34	2	926	A	C8-N9-C1'	-5.39	118.00	127.70
34	2	870	A	P-O3'-C3'	5.39	126.17	119.70
34	2	791	C	P-O3'-C3'	5.39	126.17	119.70
34	2	1559	C	C6-N1-C2	-5.38	118.15	120.30
34	2	391	C	C5-C6-N1	5.38	123.69	121.00

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
34	2	118	C	N1-C2-O2	5.38	122.13	118.90
34	2	1538	C	N1-C2-O2	5.37	122.12	118.90
34	2	1259	A	N3-C4-N9	5.37	131.70	127.40
34	2	1867	U	C2-N1-C1'	5.37	124.14	117.70
34	2	1389	C	N3-C2-O2	-5.37	118.14	121.90
34	2	1259	A	C4-N9-C1'	5.36	135.95	126.30
34	2	1826	G	C4-N9-C1'	5.36	133.47	126.50
34	2	118	C	C2-N1-C1'	5.36	124.70	118.80
34	2	1551	U	N1-C2-O2	5.35	126.55	122.80
34	2	1558	C	P-O3'-C3'	5.35	126.12	119.70
34	2	1160	U	N1-C2-O2	5.35	126.54	122.80
34	2	1501	C	C6-N1-C2	-5.35	118.16	120.30
34	2	1585	U	OP1-P-O3'	5.35	116.97	105.20
34	2	199	C	N1-C2-O2	5.35	122.11	118.90
34	2	1751	C	N3-C2-O2	-5.35	118.16	121.90
34	2	337	C	C2-N1-C1'	5.34	124.67	118.80
9	J	132	GLN	CA-CB-CG	5.34	125.14	113.40
34	2	144	U	C5-C6-N1	5.34	125.37	122.70
34	2	649	U	C6-N1-C2	-5.33	117.80	121.00
34	2	1225	U	N3-C2-O2	-5.33	118.47	122.20
34	2	578	C	N3-C2-O2	-5.33	118.17	121.90
34	2	1112	U	C2-N1-C1'	5.33	124.10	117.70
34	2	844	U	N1-C2-O2	5.33	126.53	122.80
34	2	140	U	N3-C2-O2	-5.31	118.48	122.20
34	2	1560	U	N3-C2-O2	-5.31	118.48	122.20
34	2	93	U	C5-C6-N1	5.30	125.35	122.70
34	2	483	C	C2-N1-C1'	5.30	124.64	118.80
34	2	814	U	N1-C2-O2	5.30	126.51	122.80
34	2	994	C	C6-N1-C2	-5.30	118.18	120.30
34	2	609	U	C5-C6-N1	5.29	125.35	122.70
34	2	1689	C	C6-N1-C2	-5.29	118.19	120.30
34	2	315	C	C5-C6-N1	5.29	123.64	121.00
34	2	1315	U	N3-C2-O2	-5.29	118.50	122.20
34	2	750	C	P-O3'-C3'	5.29	126.04	119.70
34	2	666	U	C5-C6-N1	5.28	125.34	122.70
34	2	585	C	N1-C2-O2	5.28	122.07	118.90
34	2	1091	C	C6-N1-C2	-5.28	118.19	120.30
34	2	1733	U	N1-C2-O2	5.28	126.50	122.80
34	2	1489	A	P-O3'-C3'	5.28	126.03	119.70
34	2	1573	G	P-O3'-C3'	5.28	126.03	119.70
34	2	1812	U	C5-C6-N1	5.28	125.34	122.70
34	2	291	G	P-O3'-C3'	5.26	126.01	119.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
34	2	1259	A	C5-N7-C8	-5.25	101.27	103.90
34	2	1277	C	C5-C6-N1	5.25	123.63	121.00
34	2	1592	C	C6-N1-C2	-5.25	118.20	120.30
34	2	1524	G	C4-C5-N7	5.25	112.90	110.80
34	2	1812	U	C2-N1-C1'	5.24	123.99	117.70
34	2	1728	U	N1-C2-O2	5.24	126.47	122.80
34	2	125	C	C6-N1-C2	-5.24	118.21	120.30
34	2	1529	C	C6-N1-C2	-5.24	118.21	120.30
34	2	386	C	C2-N1-C1'	5.23	124.55	118.80
34	2	749	U	C2-N1-C1'	5.23	123.97	117.70
3	D	133	TYR	C-N-CA	5.22	134.76	121.70
34	2	1440	C	P-O3'-C3'	5.22	125.96	119.70
34	2	1204	A	C5-C6-N6	-5.21	119.53	123.70
34	2	96	C	C5-C6-N1	5.21	123.60	121.00
34	2	143	U	P-O3'-C3'	5.20	125.94	119.70
34	2	814	U	N3-C2-O2	-5.20	118.56	122.20
34	2	1573	G	C4-N9-C1'	5.20	133.26	126.50
34	2	417	C	P-O3'-C3'	5.19	125.93	119.70
34	2	1511	U	P-O3'-C3'	5.19	125.93	119.70
34	2	1193	U	C6-N1-C2	-5.19	117.89	121.00
34	2	1693	G	N7-C8-N9	5.18	115.69	113.10
34	2	687	C	N3-C2-O2	-5.17	118.28	121.90
34	2	1708	C	C5-C6-N1	5.17	123.58	121.00
34	2	530	U	N1-C2-O2	5.16	126.42	122.80
34	2	89	C	C6-N1-C2	-5.16	118.24	120.30
34	2	1016	U	C6-N1-C2	-5.16	117.90	121.00
34	2	189	U	C2-N1-C1'	5.16	123.89	117.70
34	2	472	C	OP2-P-O3'	5.16	116.54	105.20
34	2	1153	C	C6-N1-C1'	-5.16	114.61	120.80
34	2	1230	C	C6-N1-C2	-5.15	118.24	120.30
34	2	1865	C	N1-C2-O2	5.15	121.99	118.90
34	2	563	G	C8-N9-C1'	-5.15	120.31	127.00
34	2	427	U	O4'-C1'-N1	5.15	112.32	108.20
34	2	1333	U	N3-C2-O2	-5.15	118.60	122.20
34	2	1553	C	O4'-C1'-N1	5.14	112.32	108.20
34	2	1323	U	C5-C6-N1	5.14	125.27	122.70
34	2	1130	G	C4-N9-C1'	5.14	133.18	126.50
34	2	891	G	N3-C4-N9	5.13	129.08	126.00
34	2	868	G	N3-C4-C5	5.13	131.16	128.60
34	2	1659	U	O4'-C1'-N1	5.13	112.30	108.20
34	2	1572	C	N1-C2-O2	5.13	121.98	118.90
34	2	314	U	P-O3'-C3'	5.12	125.84	119.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
34	2	1622	U	C6-N1-C1'	-5.12	114.04	121.20
34	2	435	A	N7-C8-N9	5.12	116.36	113.80
34	2	1302	G	OP2-P-O3'	5.12	116.45	105.20
34	2	1709	G	N3-C4-C5	-5.11	126.04	128.60
34	2	100	U	N1-C2-O2	5.11	126.38	122.80
34	2	94	G	N7-C8-N9	5.11	115.66	113.10
34	2	555	A	C2-N3-C4	5.11	113.16	110.60
34	2	423	U	N3-C2-O2	-5.11	118.62	122.20
34	2	685	A	C8-N9-C4	-5.11	103.76	105.80
34	2	1348	G	C2-N3-C4	5.11	114.45	111.90
34	2	352	U	N3-C2-O2	-5.10	118.63	122.20
34	2	1271	C	N3-C2-O2	-5.10	118.33	121.90
34	2	1858	G	C4-N9-C1'	5.09	133.12	126.50
34	2	425	G	C2-N3-C4	5.09	114.45	111.90
34	2	659	G	N9-C4-C5	-5.09	103.36	105.40
34	2	1111	U	C5-C6-N1	5.09	125.25	122.70
34	2	1259	A	N9-C4-C5	-5.09	103.76	105.80
34	2	1570	G	N3-C4-N9	5.09	129.05	126.00
14	O	49	LEU	CA-CB-CG	5.09	127.00	115.30
34	2	1629	C	C5-C6-N1	5.08	123.54	121.00
34	2	877	C	C2-N1-C1'	5.08	124.39	118.80
34	2	1475	G	N3-C4-N9	-5.08	122.95	126.00
34	2	1157	G	C5-C6-O6	5.08	131.65	128.60
34	2	792	C	C6-N1-C2	-5.08	118.27	120.30
34	2	1316	C	P-O3'-C3'	5.08	125.79	119.70
34	2	1534	C	P-O3'-C3'	5.07	125.78	119.70
34	2	1794	C	N1-C2-O2	5.07	121.94	118.90
34	2	1199	A	N1-C6-N6	-5.07	115.56	118.60
34	2	535	G	O5'-P-OP2	-5.07	101.14	105.70
34	2	1151	G	N1-C6-O6	-5.07	116.86	119.90
34	2	357	C	C4-C5-C6	-5.06	114.87	117.40
34	2	188	C	N1-C2-O2	5.06	121.94	118.90
34	2	1625	U	C6-N1-C2	-5.06	117.97	121.00
34	2	508	A	C2-N3-C4	5.06	113.13	110.60
34	2	1798	C	C6-N1-C2	-5.06	118.28	120.30
34	2	1615	U	N1-C2-O2	5.05	126.34	122.80
34	2	1053	C	C6-N1-C2	-5.05	118.28	120.30
34	2	973	C	C5-C6-N1	5.05	123.52	121.00
34	2	1231	C	N1-C2-O2	5.04	121.92	118.90
34	2	118	C	C5-C6-N1	5.04	123.52	121.00
34	2	1336	C	C5-C6-N1	5.03	123.52	121.00
34	2	1348	G	N1-C6-O6	-5.03	116.88	119.90

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
34	2	1688	C	C5-C6-N1	5.03	123.52	121.00
36	u	143	LEU	CA-CB-CG	5.03	126.86	115.30
34	2	44	U	O4'-C1'-N1	5.02	112.22	108.20
34	2	1146	C	C2-N1-C1'	5.02	124.32	118.80
34	2	1191	C	C5-C6-N1	5.02	123.51	121.00
34	2	656	G	C8-N9-C4	-5.01	104.39	106.40
34	2	974	C	C6-N1-C2	-5.01	118.29	120.30
34	2	1828	C	C5-C6-N1	5.01	123.51	121.00
34	2	958	G	C4-N9-C1'	5.01	133.02	126.50
34	2	685	A	N7-C8-N9	5.01	116.31	113.80
34	2	877	C	C6-N1-C2	-5.01	118.30	120.30
34	2	891	G	N3-C4-C5	-5.01	126.09	128.60
34	2	1022	U	C5-C6-N1	5.01	125.20	122.70
34	2	1703	C	C6-N1-C2	-5.01	118.30	120.30
34	2	580	U	N1-C2-O2	5.00	126.30	122.80
34	2	1430	C	P-O3'-C3'	5.00	125.70	119.70
34	2	1511	U	C6-N1-C2	-5.00	118.00	121.00

There are no chirality outliers.

All (12) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
5	F	194	PRO	Peptide
5	F	195	THR	Peptide
5	F	79	PHE	Peptide
10	K	40	ALA	Peptide
18	S	42	PRO	Peptide
18	S	43	SER	Peptide
23	X	112	VAL	Peptide
23	X	60	LYS	Peptide
24	Y	118	ARG	Peptide
27	b	52	THR	Peptide
31	f	6	LEU	Peptide
36	u	80	GLY	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	B	204/206 (99%)	187 (92%)	17 (8%)	0	100	100
2	C	211/213 (99%)	200 (95%)	11 (5%)	0	100	100
3	D	216/218 (99%)	201 (93%)	15 (7%)	0	100	100
4	E	260/262 (99%)	249 (96%)	11 (4%)	0	100	100
5	F	223/225 (99%)	207 (93%)	15 (7%)	1 (0%)	34	69
6	G	228/230 (99%)	212 (93%)	16 (7%)	0	100	100
7	H	184/186 (99%)	173 (94%)	11 (6%)	0	100	100
8	I	203/205 (99%)	196 (97%)	7 (3%)	0	100	100
9	J	178/180 (99%)	159 (89%)	18 (10%)	1 (1%)	25	64
10	K	187/189 (99%)	174 (93%)	11 (6%)	2 (1%)	14	51
11	L	149/151 (99%)	139 (93%)	10 (7%)	0	100	100
12	M	93/95 (98%)	84 (90%)	9 (10%)	0	100	100
13	N	147/149 (99%)	140 (95%)	7 (5%)	0	100	100
14	O	121/123 (98%)	113 (93%)	8 (7%)	0	100	100
15	P	133/135 (98%)	120 (90%)	13 (10%)	0	100	100
16	Q	118/120 (98%)	114 (97%)	4 (3%)	0	100	100
17	R	137/139 (99%)	127 (93%)	10 (7%)	0	100	100
18	S	130/132 (98%)	122 (94%)	8 (6%)	0	100	100
19	T	141/143 (99%)	131 (93%)	10 (7%)	0	100	100
20	U	142/144 (99%)	136 (96%)	6 (4%)	0	100	100
21	V	99/101 (98%)	93 (94%)	6 (6%)	0	100	100
22	W	127/129 (98%)	120 (94%)	7 (6%)	0	100	100
23	X	139/141 (99%)	132 (95%)	6 (4%)	1 (1%)	22	61
24	Y	122/124 (98%)	118 (97%)	4 (3%)	0	100	100
25	Z	80/82 (98%)	76 (95%)	4 (5%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
26	a	70/72 (97%)	66 (94%)	4 (6%)	0	100 100
27	b	80/82 (98%)	71 (89%)	9 (11%)	0	100 100
28	c	99/101 (98%)	93 (94%)	6 (6%)	0	100 100
29	d	59/61 (97%)	53 (90%)	6 (10%)	0	100 100
30	e	54/56 (96%)	45 (83%)	9 (17%)	0	100 100
31	f	52/54 (96%)	44 (85%)	7 (14%)	1 (2%)	8 39
32	g	70/72 (97%)	56 (80%)	14 (20%)	0	100 100
33	j	312/314 (99%)	275 (88%)	37 (12%)	0	100 100
35	i	27/180 (15%)	24 (89%)	3 (11%)	0	100 100
36	u	607/804 (76%)	570 (94%)	36 (6%)	1 (0%)	47 79
All	All	5402/5818 (93%)	5020 (93%)	375 (7%)	7 (0%)	54 83

All (7) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
9	J	161	LEU
5	F	192	TRP
31	f	6	LEU
36	u	49	SER
10	K	40	ALA
10	K	41	VAL
23	X	86	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	B	172/172 (100%)	172 (100%)	0	100 100
2	C	194/194 (100%)	192 (99%)	2 (1%)	76 90
3	D	182/184 (99%)	180 (99%)	2 (1%)	73 88
4	E	224/224 (100%)	224 (100%)	0	100 100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
5	F	188/189 (100%)	188 (100%)	0	100	100
6	G	200/200 (100%)	200 (100%)	0	100	100
7	H	167/167 (100%)	167 (100%)	0	100	100
8	I	178/178 (100%)	177 (99%)	1 (1%)	86	94
9	J	160/160 (100%)	158 (99%)	2 (1%)	69	87
10	K	159/159 (100%)	158 (99%)	1 (1%)	86	94
11	L	135/135 (100%)	134 (99%)	1 (1%)	84	94
12	M	86/86 (100%)	86 (100%)	0	100	100
13	N	130/130 (100%)	130 (100%)	0	100	100
14	O	104/104 (100%)	103 (99%)	1 (1%)	76	90
15	P	104/105 (99%)	102 (98%)	2 (2%)	57	81
16	Q	107/107 (100%)	107 (100%)	0	100	100
17	R	115/115 (100%)	115 (100%)	0	100	100
18	S	118/119 (99%)	116 (98%)	2 (2%)	60	83
19	T	124/124 (100%)	124 (100%)	0	100	100
20	U	114/114 (100%)	114 (100%)	0	100	100
21	V	93/93 (100%)	93 (100%)	0	100	100
22	W	112/112 (100%)	110 (98%)	2 (2%)	59	82
23	X	113/113 (100%)	112 (99%)	1 (1%)	78	91
24	Y	108/108 (100%)	108 (100%)	0	100	100
25	Z	66/66 (100%)	66 (100%)	0	100	100
26	a	64/64 (100%)	64 (100%)	0	100	100
27	b	74/74 (100%)	74 (100%)	0	100	100
28	c	88/88 (100%)	88 (100%)	0	100	100
29	d	54/54 (100%)	53 (98%)	1 (2%)	57	81
30	e	40/45 (89%)	39 (98%)	1 (2%)	47	77
31	f	48/48 (100%)	47 (98%)	1 (2%)	53	79
32	g	55/65 (85%)	54 (98%)	1 (2%)	59	82
33	j	272/272 (100%)	271 (100%)	1 (0%)	91	95
35	i	26/151 (17%)	26 (100%)	0	100	100
36	u	539/705 (76%)	535 (99%)	4 (1%)	84	94

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
All	All	4713/5024 (94%)	4687 (99%)	26 (1%)	86 94

All (26) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
2	C	33	VAL
2	C	219	LYS
3	D	137	VAL
3	D	248	TYR
8	I	93	THR
9	J	8	VAL
9	J	67	ASP
10	K	194	ASP
11	L	69	ARG
14	O	99	LYS
15	P	132	VAL
15	P	150	ARG
18	S	5	ARG
18	S	60	ARG
22	W	57	ARG
22	W	80	ASP
23	X	105	PHE
29	d	58	LEU
30	e	8	ARG
31	f	7	TYR
32	g	113	LYS
33	j	37	ASP
36	u	50	ARG
36	u	202	ASP
36	u	299	MET
36	u	704	PHE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (42) such sidechains are listed below:

Mol	Chain	Res	Type
1	B	9	GLN
2	C	99	ASN
2	C	149	GLN
2	C	163	GLN
2	C	179	ASN
2	C	202	GLN

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Mol	Chain	Res	Type
4	E	8	HIS
4	E	50	ASN
4	E	98	ASN
4	E	179	ASN
6	G	81	HIS
7	H	114	GLN
8	I	138	ASN
11	L	11	GLN
11	L	18	GLN
13	N	58	HIS
13	N	90	HIS
13	N	105	ASN
15	P	79	GLN
15	P	94	HIS
16	Q	103	ASN
18	S	29	HIS
19	T	85	ASN
21	V	85	HIS
22	W	90	GLN
23	X	73	GLN
23	X	97	ASN
23	X	127	ASN
24	Y	89	HIS
26	a	45	ASN
26	a	64	ASN
26	a	103	HIS
29	d	29	GLN
29	d	45	ASN
33	j	196	ASN
33	j	272	GLN
33	j	296	GLN
36	u	74	GLN
36	u	121	ASN
36	u	356	GLN
36	u	519	ASN
36	u	575	GLN

5.3.3 RNA

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
34	2	1662/1868 (88%)	476 (28%)	47 (2%)

All (476) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
34	2	3	C
34	2	9	U
34	2	15	U
34	2	23	G
34	2	26	U
34	2	33	G
34	2	37	C
34	2	41	G
34	2	44	U
34	2	45	A
34	2	46	A
34	2	49	C
34	2	56	G
34	2	58	C
34	2	59	U
34	2	62	G
34	2	65	C
34	2	66	G
34	2	67	C
34	2	68	A
34	2	69	C
34	2	72	C
34	2	73	C
34	2	75	G
34	2	76	U
34	2	77	A
34	2	79	A
34	2	95	G
34	2	99	A
34	2	100	U
34	2	103	A
34	2	113	G
34	2	114	G
34	2	115	U
34	2	116	U
34	2	127	C
34	2	130	G
34	2	143	U
34	2	144	U
34	2	147	A
34	2	155	G
34	2	160	U

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Mol	Chain	Res	Type
34	2	162	C
34	2	171	A
34	2	175	A
34	2	181	A
34	2	182	C
34	2	184	G
34	2	188	C
34	2	189	U
34	2	191	A
34	2	211	G
34	2	214	U
34	2	215	G
34	2	216	C
34	2	289	G
34	2	290	U
34	2	291	G
34	2	292	A
34	2	295	C
34	2	297	A
34	2	305	U
34	2	307	G
34	2	308	G
34	2	309	G
34	2	310	C
34	2	315	C
34	2	319	C
34	2	321	C
34	2	331	C
34	2	332	G
34	2	333	G
34	2	338	G
34	2	351	G
34	2	360	A
34	2	362	C
34	2	364	A
34	2	368	U
34	2	369	C
34	2	370	G
34	2	377	G
34	2	380	G
34	2	383	G
34	2	384	U

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Mol	Chain	Res	Type
34	2	385	G
34	2	386	C
34	2	398	A
34	2	400	C
34	2	407	G
34	2	408	A
34	2	409	C
34	2	418	A
34	2	421	G
34	2	428	U
34	2	429	C
34	2	438	G
34	2	439	A
34	2	441	C
34	2	447	A
34	2	448	A
34	2	449	A
34	2	450	C
34	2	464	A
34	2	465	A
34	2	466	G
34	2	470	G
34	2	471	G
34	2	472	C
34	2	473	A
34	2	474	G
34	2	476	A
34	2	482	G
34	2	483	C
34	2	487	U
34	2	492	C
34	2	500	A
34	2	502	C
34	2	507	G
34	2	509	G
34	2	523	A
34	2	525	A
34	2	533	A
34	2	534	G
34	2	535	G
34	2	537	C
34	2	541	U

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Mol	Chain	Res	Type
34	2	542	U
34	2	544	G
34	2	546	G
34	2	548	C
34	2	553	U
34	2	554	A
34	2	555	A
34	2	556	U
34	2	557	U
34	2	559	G
34	2	560	A
34	2	563	G
34	2	564	A
34	2	568	C
34	2	573	U
34	2	574	A
34	2	583	A
34	2	587	A
34	2	589	G
34	2	590	A
34	2	591	U
34	2	593	C
34	2	594	A
34	2	598	G
34	2	599	A
34	2	600	G
34	2	603	C
34	2	605	A
34	2	607	U
34	2	608	C
34	2	614	C
34	2	617	G
34	2	628	A
34	2	629	A
34	2	631	U
34	2	643	A
34	2	644	G
34	2	655	A
34	2	659	G
34	2	660	C
34	2	664	A
34	2	668	A

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Mol	Chain	Res	Type
34	2	669	A
34	2	671	A
34	2	672	A
34	2	673	G
34	2	677	G
34	2	683	G
34	2	685	A
34	2	688	U
34	2	748	C
34	2	749	U
34	2	750	C
34	2	751	G
34	2	792	C
34	2	794	A
34	2	797	C
34	2	799	U
34	2	801	U
34	2	809	A
34	2	810	A
34	2	811	A
34	2	812	A
34	2	821	G
34	2	822	U
34	2	823	U
34	2	824	C
34	2	830	A
34	2	844	U
34	2	847	A
34	2	852	G
34	2	865	A
34	2	867	G
34	2	869	A
34	2	870	A
34	2	871	U
34	2	872	A
34	2	873	G
34	2	874	G
34	2	878	G
34	2	879	C
34	2	880	G
34	2	887	U
34	2	890	U

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Mol	Chain	Res	Type
34	2	891	G
34	2	894	G
34	2	898	U
34	2	902	G
34	2	903	A
34	2	906	U
34	2	913	A
34	2	914	U
34	2	917	U
34	2	920	A
34	2	924	G
34	2	926	A
34	2	930	C
34	2	933	G
34	2	934	G
34	2	959	G
34	2	963	A
34	2	968	U
34	2	970	G
34	2	971	G
34	2	973	C
34	2	978	G
34	2	981	A
34	2	989	C
34	2	990	A
34	2	991	G
34	2	992	A
34	2	999	G
34	2	1001	A
34	2	1017	U
34	2	1023	A
34	2	1028	A
34	2	1041	G
34	2	1045	U
34	2	1049	A
34	2	1060	A
34	2	1061	U
34	2	1062	A
34	2	1067	C
34	2	1080	A
34	2	1083	A
34	2	1085	C

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Mol	Chain	Res	Type
34	2	1088	U
34	2	1089	G
34	2	1096	G
34	2	1115	U
34	2	1116	C
34	2	1120	U
34	2	1121	G
34	2	1123	C
34	2	1133	A
34	2	1137	U
34	2	1138	C
34	2	1141	G
34	2	1143	A
34	2	1144	A
34	2	1148	A
34	2	1153	C
34	2	1154	U
34	2	1155	U
34	2	1157	G
34	2	1158	G
34	2	1171	G
34	2	1183	A
34	2	1194	A
34	2	1195	A
34	2	1199	A
34	2	1207	G
34	2	1209	A
34	2	1211	G
34	2	1215	C
34	2	1217	A
34	2	1221	G
34	2	1224	G
34	2	1227	G
34	2	1232	U
34	2	1233	G
34	2	1236	G
34	2	1242	U
34	2	1243	U
34	2	1250	A
34	2	1251	A
34	2	1256	G
34	2	1257	G

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Mol	Chain	Res	Type
34	2	1259	A
34	2	1265	A
34	2	1266	C
34	2	1274	G
34	2	1275	G
34	2	1283	C
34	2	1284	A
34	2	1285	G
34	2	1286	G
34	2	1288	U
34	2	1298	G
34	2	1300	U
34	2	1301	A
34	2	1302	G
34	2	1303	C
34	2	1305	C
34	2	1308	U
34	2	1309	C
34	2	1313	A
34	2	1315	U
34	2	1317	C
34	2	1320	G
34	2	1330	G
34	2	1331	C
34	2	1333	U
34	2	1341	C
34	2	1342	U
34	2	1348	G
34	2	1358	U
34	2	1363	C
34	2	1364	U
34	2	1366	G
34	2	1371	U
34	2	1372	U
34	2	1374	C
34	2	1375	G
34	2	1378	A
34	2	1382	A
34	2	1385	G
34	2	1404	U
34	2	1406	G
34	2	1411	G

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Mol	Chain	Res	Type
34	2	1416	C
34	2	1426	U
34	2	1428	G
34	2	1429	G
34	2	1430	C
34	2	1431	G
34	2	1432	U
34	2	1439	A
34	2	1441	U
34	2	1442	U
34	2	1446	A
34	2	1452	A
34	2	1454	A
34	2	1455	A
34	2	1462	U
34	2	1463	U
34	2	1465	A
34	2	1466	G
34	2	1474	A
34	2	1476	A
34	2	1477	U
34	2	1478	U
34	2	1483	A
34	2	1484	A
34	2	1489	A
34	2	1490	G
34	2	1493	C
34	2	1494	U
34	2	1495	G
34	2	1498	A
34	2	1505	U
34	2	1507	G
34	2	1508	A
34	2	1510	G
34	2	1512	C
34	2	1519	U
34	2	1520	G
34	2	1521	C
34	2	1522	A
34	2	1526	G
34	2	1527	C
34	2	1528	G

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Mol	Chain	Res	Type
34	2	1531	A
34	2	1533	A
34	2	1534	C
34	2	1535	U
34	2	1548	G
34	2	1551	U
34	2	1552	G
34	2	1555	U
34	2	1559	C
34	2	1560	U
34	2	1563	G
34	2	1566	G
34	2	1567	G
34	2	1569	A
34	2	1570	G
34	2	1573	G
34	2	1574	C
34	2	1575	G
34	2	1578	U
34	2	1579	A
34	2	1581	C
34	2	1582	C
34	2	1585	U
34	2	1586	U
34	2	1587	G
34	2	1588	A
34	2	1589	A
34	2	1599	U
34	2	1600	G
34	2	1602	U
34	2	1603	G
34	2	1606	G
34	2	1612	G
34	2	1617	G
34	2	1618	C
34	2	1621	U
34	2	1623	A
34	2	1647	A
34	2	1654	G
34	2	1656	G
34	2	1665	G
34	2	1671	G

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Mol	Chain	Res	Type
34	2	1672	U
34	2	1674	G
34	2	1675	A
34	2	1686	G
34	2	1689	C
34	2	1693	G
34	2	1695	A
34	2	1698	C
34	2	1701	C
34	2	1706	G
34	2	1710	C
34	2	1712	A
34	2	1714	U
34	2	1716	C
34	2	1721	U
34	2	1722	G
34	2	1724	A
34	2	1727	G
34	2	1728	U
34	2	1729	U
34	2	1730	U
34	2	1756	C
34	2	1776	G
34	2	1778	C
34	2	1783	C
34	2	1784	G
34	2	1785	C
34	2	1786	U
34	2	1801	A
34	2	1808	U
34	2	1809	A
34	2	1812	U
34	2	1814	G
34	2	1819	A
34	2	1822	A
34	2	1823	A
34	2	1825	A
34	2	1826	G
34	2	1827	U
34	2	1828	C
34	2	1829	G
34	2	1833	C

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Mol	Chain	Res	Type
34	2	1835	A
34	2	1838	U
34	2	1839	U
34	2	1845	A
34	2	1849	G
34	2	1850	A
34	2	1852	C
34	2	1860	A
34	2	1861	G
34	2	1862	G
34	2	1863	A
34	2	1864	U
34	2	1865	C
34	2	1869	A

All (47) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
34	2	65	C
34	2	102	A
34	2	114	G
34	2	143	U
34	2	180	G
34	2	291	G
34	2	307	G
34	2	314	U
34	2	332	G
34	2	382	C
34	2	440	G
34	2	465	A
34	2	500	A
34	2	553	U
34	2	750	C
34	2	791	C
34	2	811	A
34	2	870	A
34	2	958	G
34	2	980	A
34	2	1137	U
34	2	1231	C
34	2	1302	G
34	2	1308	U

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Mol	Chain	Res	Type
34	2	1316	C
34	2	1330	G
34	2	1373	C
34	2	1403	C
34	2	1425	G
34	2	1430	C
34	2	1431	G
34	2	1438	A
34	2	1440	C
34	2	1464	C
34	2	1489	A
34	2	1494	U
34	2	1511	U
34	2	1534	C
34	2	1558	C
34	2	1573	G
34	2	1585	U
34	2	1587	G
34	2	1601	A
34	2	1679	A
34	2	1734	G
34	2	1808	U
34	2	1832	A

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

There are no non-standard protein/DNA/RNA residues in this entry.

5.5 Carbohydrates (i)

There are no monosaccharides in this entry.

5.6 Ligand geometry (i)

Of 3 ligands modelled in this entry, 3 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

5.7 Other polymers

There are no such residues in this entry.

5.8 Polymer linkage issues

The following chains have linkage breaks:

Mol	Chain	Number of breaks
34	2	1

All chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	2	1698:C	O3'	1699:A	P	4.94

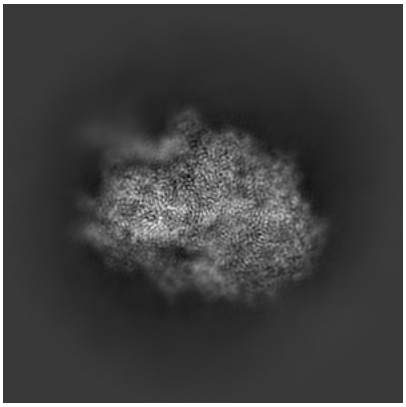
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-11310. These allow visual inspection of the internal detail of the map and identification of artifacts.

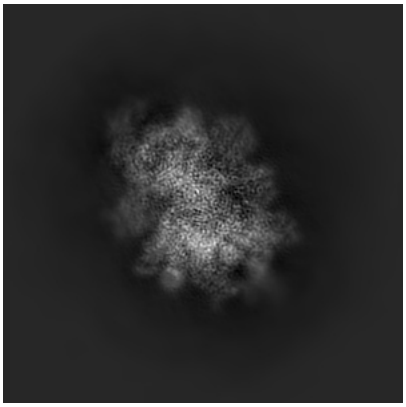
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections

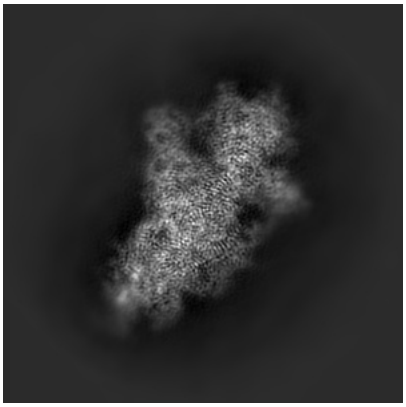
6.1.1 Primary map



X



Y

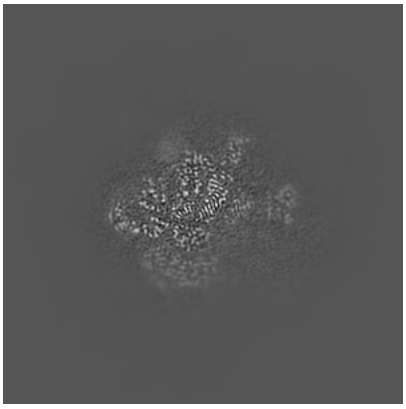


Z

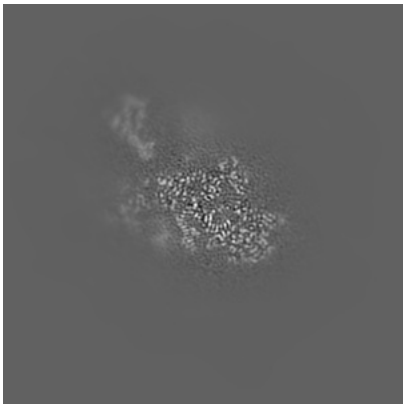
The images above show the map projected in three orthogonal directions.

6.2 Central slices

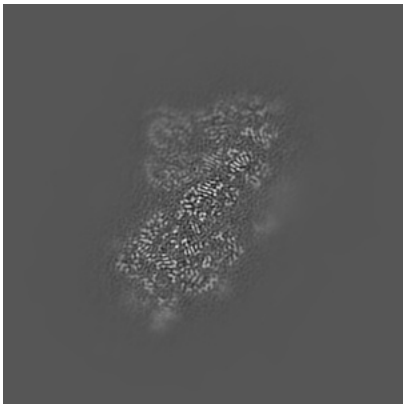
6.2.1 Primary map



X Index: 180



Y Index: 180

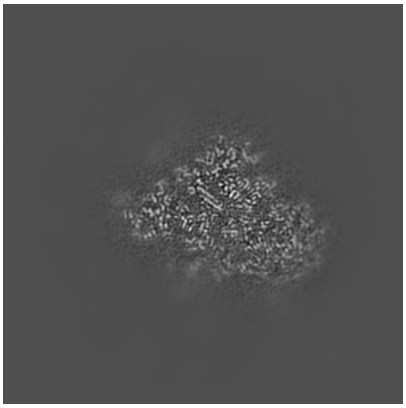


Z Index: 180

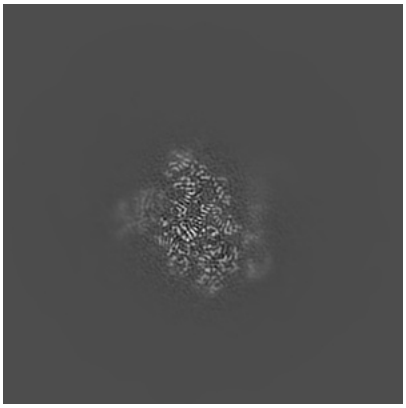
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

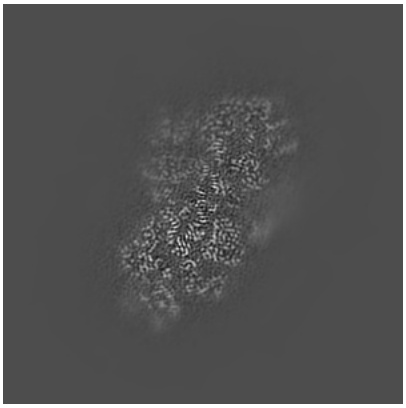
6.3.1 Primary map



X Index: 202



Y Index: 141

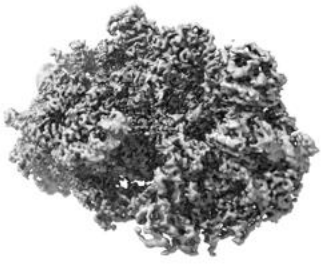


Z Index: 175

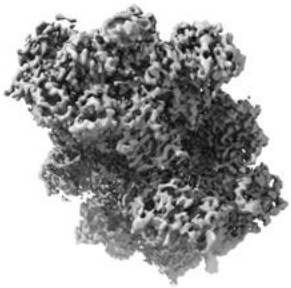
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal surface views (i)

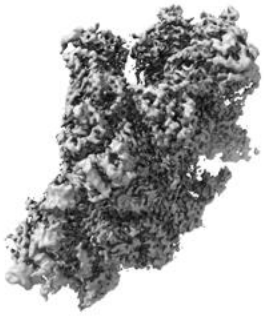
6.4.1 Primary map



X



Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.038. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

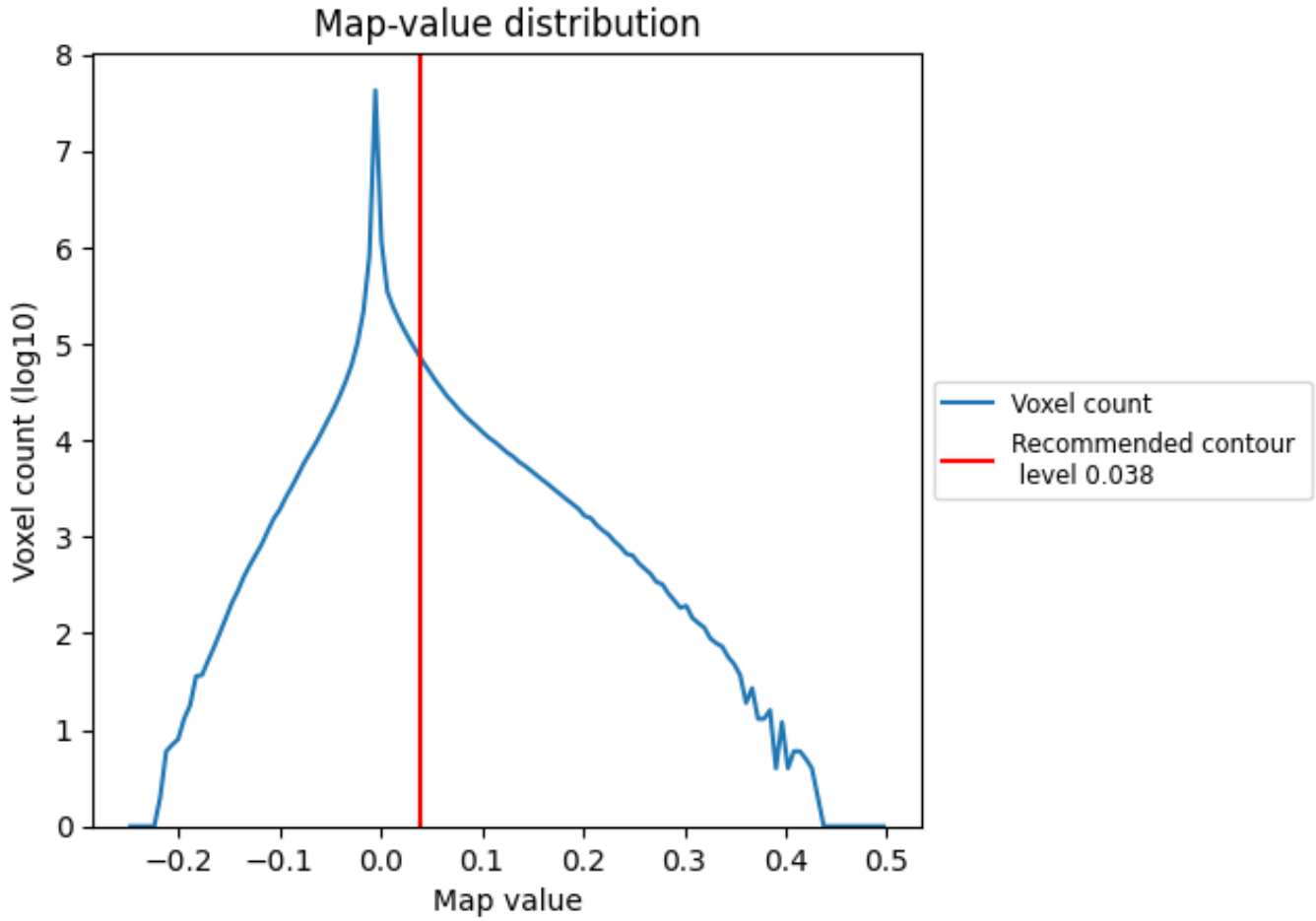
6.5 Mask visualisation (i)

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

7 Map analysis

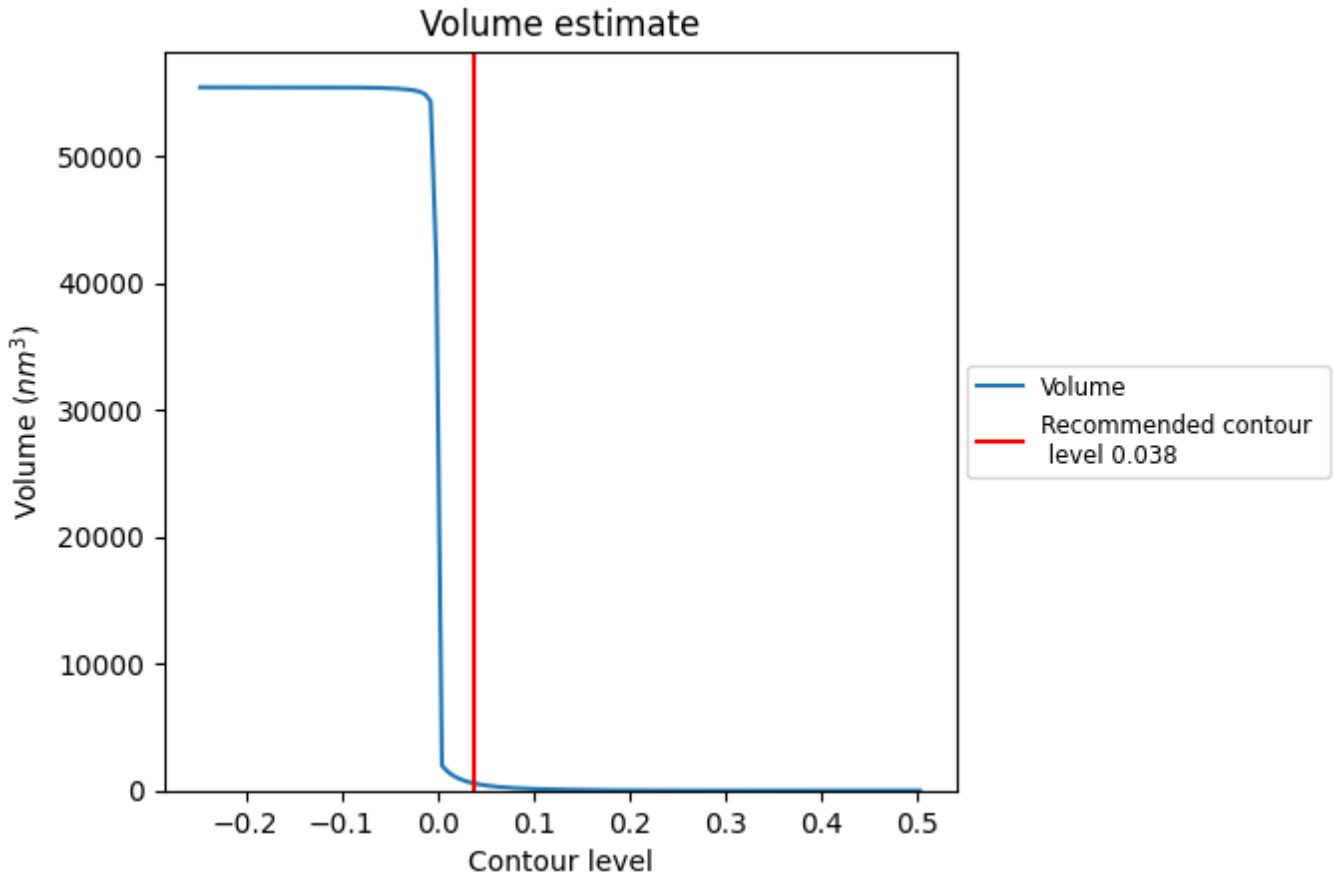
This section contains the results of statistical analysis of the map.

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.

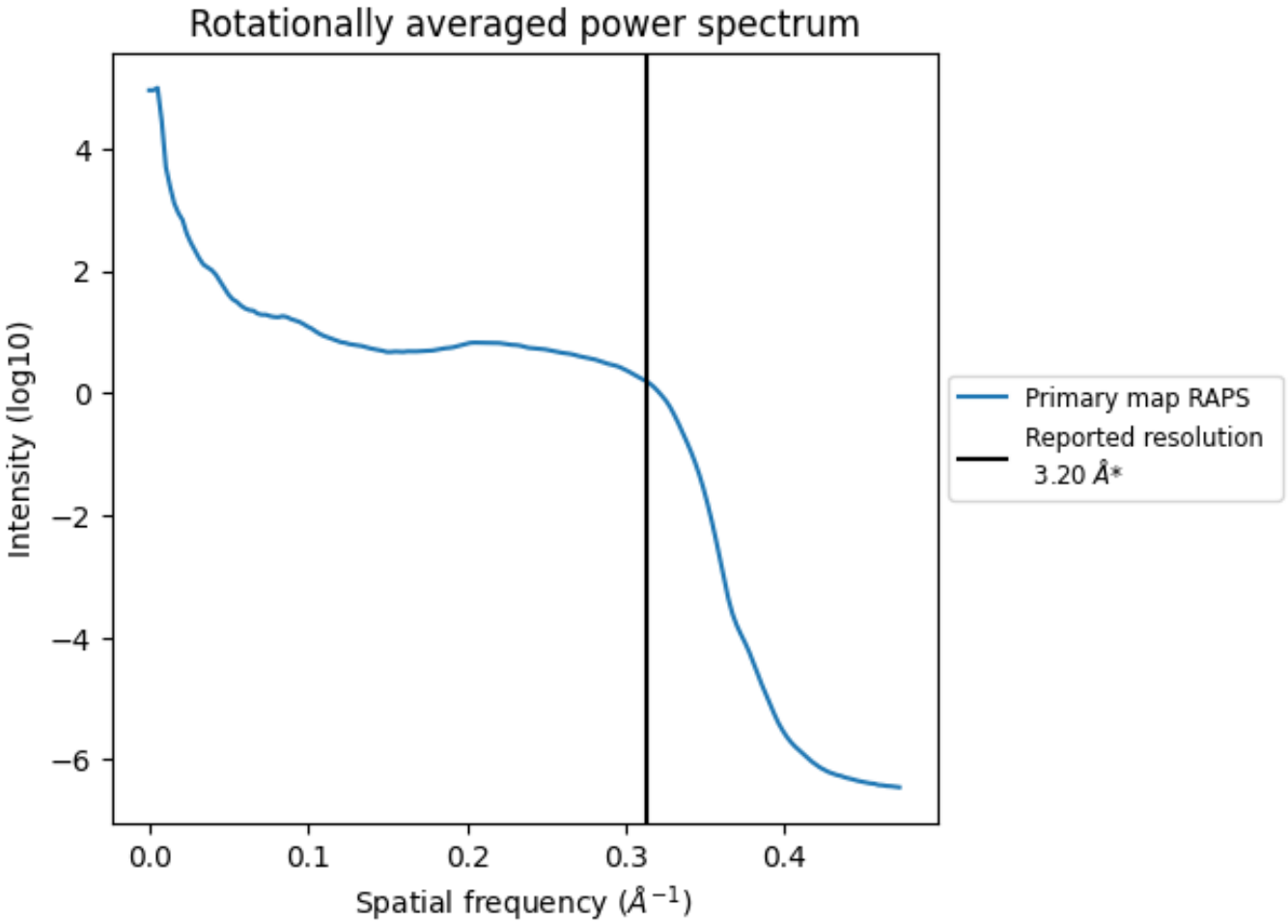
7.2 Volume estimate



The volume at the recommended contour level is 568 nm^3; this corresponds to an approximate mass of 513 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)

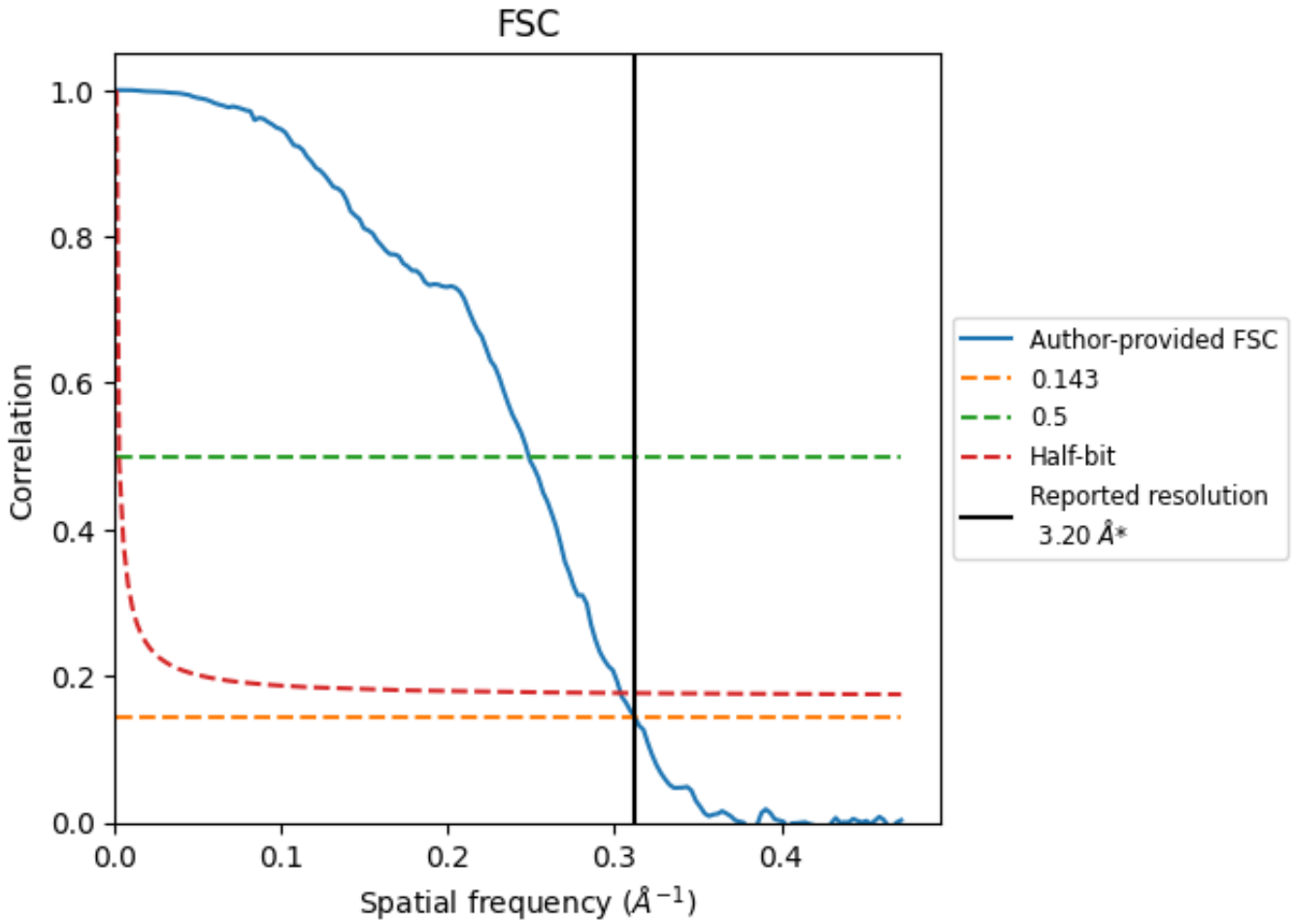


*Reported resolution corresponds to spatial frequency of 0.312 $Å^{-1}$

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 0.312 Å^{-1}

8.2 Resolution estimates (i)

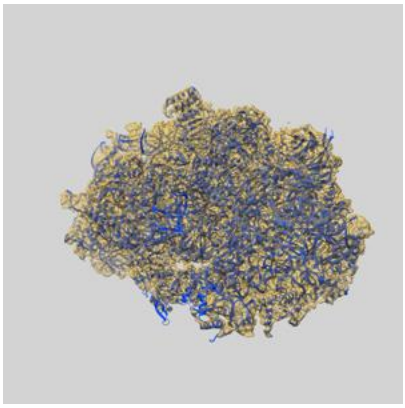
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.20	-	-
Author-provided FSC curve	3.20	4.02	3.29
Unmasked-calculated*	-	-	-

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

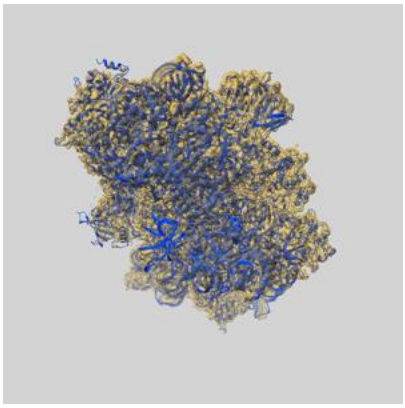
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-11310 and PDB model 6ZN5. Per-residue inclusion information can be found in section 3 on page 11.

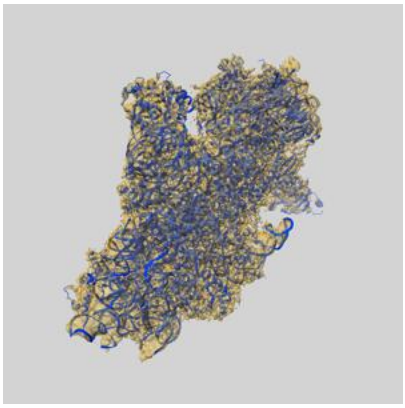
9.1 Map-model overlay



X



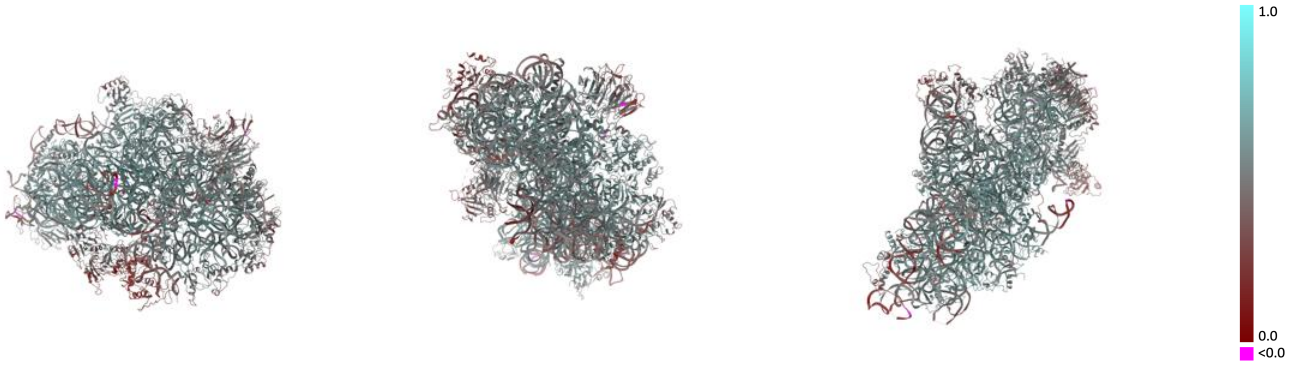
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.038 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.

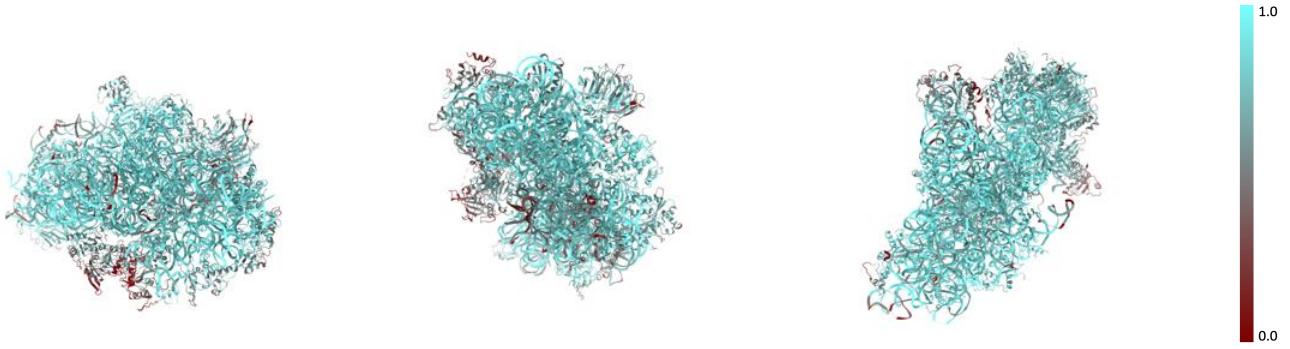
9.2 Q-score mapped to coordinate model (i)



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.

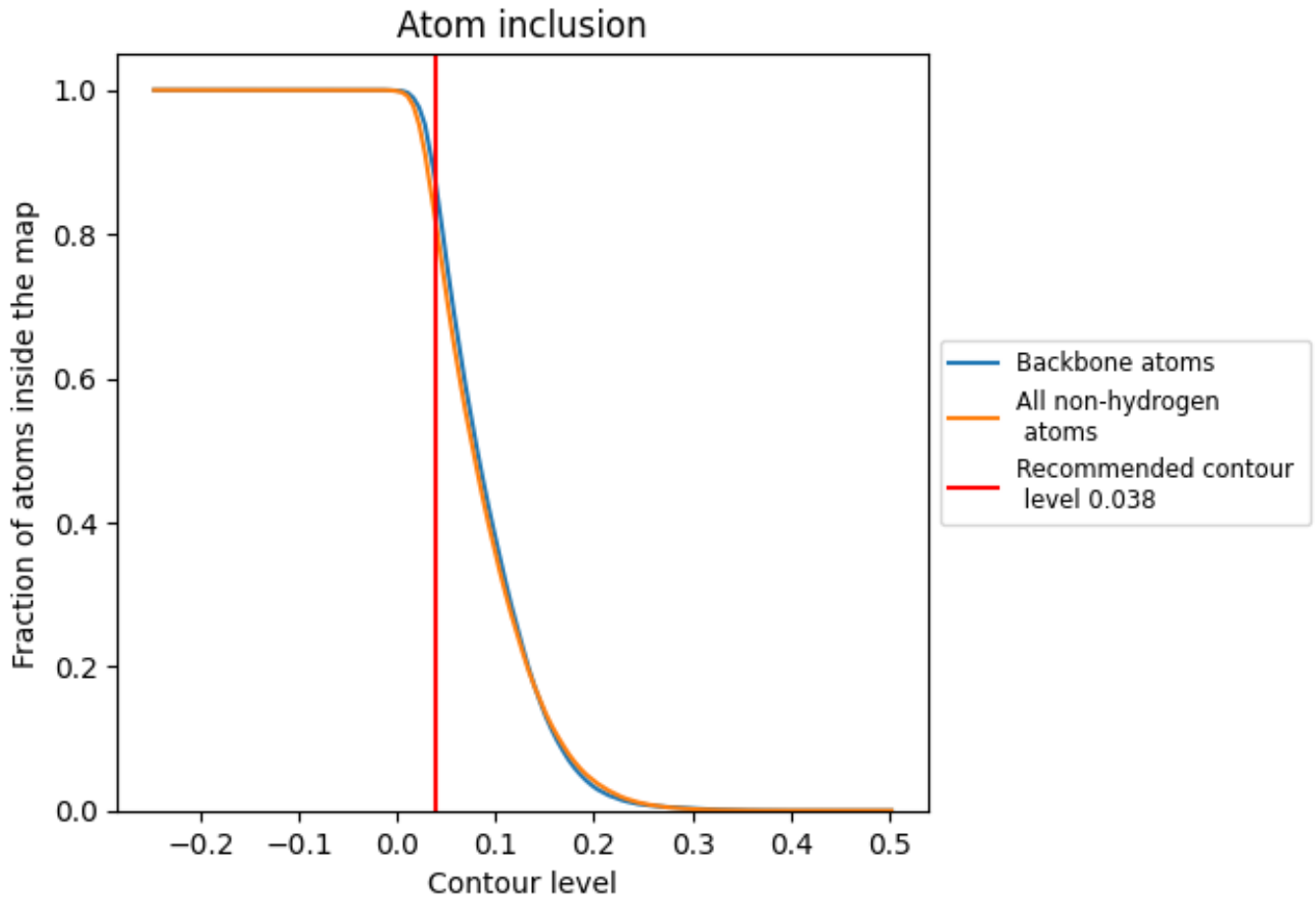
9.3 Atom inclusion mapped to coordinate model (i)



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 (0.038).

9.4 Atom inclusion (i)



At the recommended contour level, 88% of all backbone atoms, 83% 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 (0.038) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.8259	0.5140
2	0.9081	0.5270
B	0.9154	0.5590
C	0.6274	0.4410
D	0.9521	0.5990
E	0.9170	0.5820
F	0.7859	0.5160
G	0.7950	0.5120
H	0.7663	0.4760
I	0.8490	0.5380
J	0.9312	0.5840
K	0.7545	0.4940
L	0.8819	0.5750
M	0.7397	0.4590
N	0.8748	0.5430
O	0.2907	0.2560
P	0.5752	0.4380
Q	0.7222	0.4820
R	0.8416	0.5390
S	0.8301	0.5290
T	0.6743	0.4640
U	0.7930	0.5160
V	0.7532	0.5120
W	0.9564	0.6070
X	0.9141	0.5930
Y	0.8974	0.5570
Z	0.9067	0.5730
a	0.5865	0.4290
b	0.8280	0.5240
c	0.5435	0.5140
d	0.7007	0.4920
e	0.8280	0.5360
f	0.9521	0.6050
g	0.4574	0.3220
i	0.9142	0.5890

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Chain	Atom inclusion	Q-score
j	0.6752	0.4300
u	0.5324	0.4240