



Full wwPDB EM Validation Report ⓘ

Jan 16, 2025 – 12:49 am GMT

PDB ID : 9H3R
EMDB ID : EMD-51835
Title : 50S subunit precursor C-CP_YjgA_(L22)-
Authors : Lauer, S.; Nikolay, R.; Spahn, C.M.T.
Deposited on : 2024-10-17
Resolution : 4.12 Å (reported)
Based on initial model : 8RPY

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:

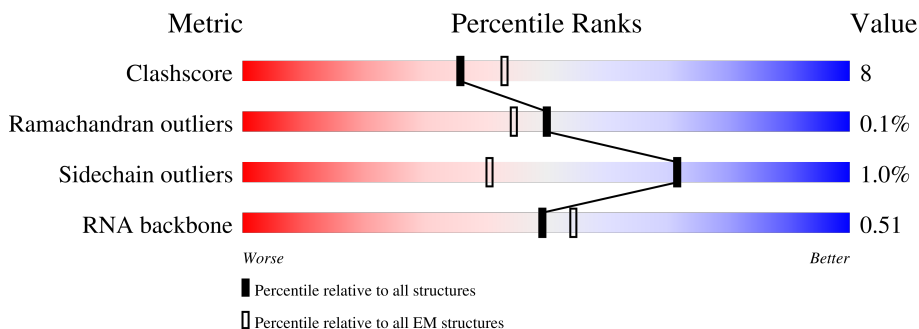
EMDB validation analysis : 0.0.1.dev113
MolProbity : 4.02b-467
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.40

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 4.12 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.



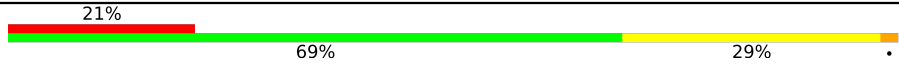
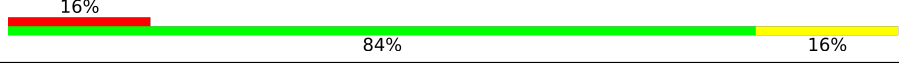
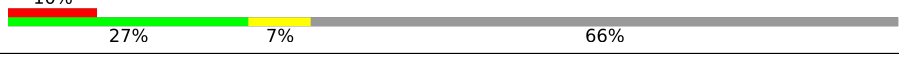


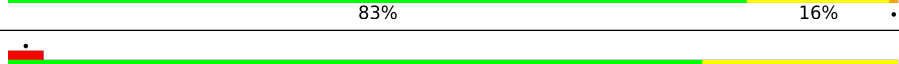
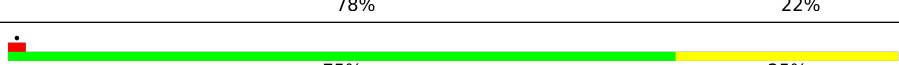
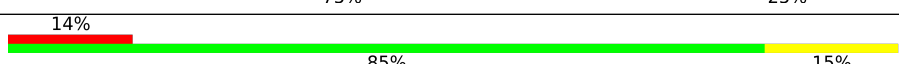
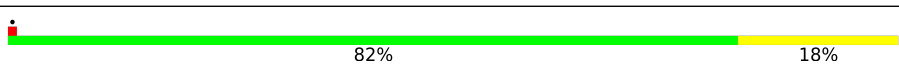
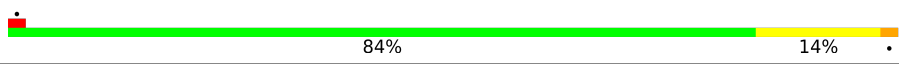

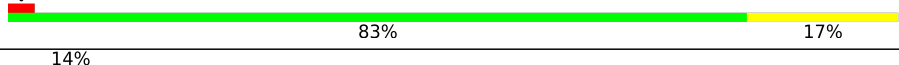
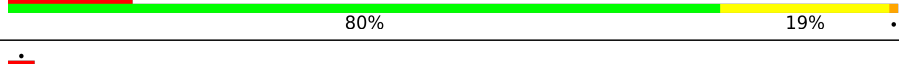

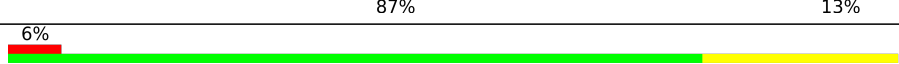



Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	210492	15764
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415
RNA backbone	6643	2191

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 $\leq 5\%$. 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	C	183	 13% 80% 6% 14%
2	2	46	 54% 28% 17%
3	4	38	 16% 76% 24%
4	A	2903	 51% 30% 8% 11%
5	B	120	 62% 32% 6%
6	D	209	 5% 66% 16% 17%
7	E	201	 70% 17% 12%

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Mol	Chain	Length	Quality of chain
8	F	177	
9	G	176	
10	H	149	
11	J	142	
12	K	122	
13	L	143	
14	N	120	
15	O	116	
16	P	114	
17	Q	117	
18	R	103	
19	T	93	
20	U	102	
21	V	94	
22	W	75	
23	X	77	
24	Y	63	
25	Z	58	

2 Entry composition [i](#)

There are 25 unique types of molecules in this entry. The entry contains 77649 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 UPF0307 protein YjgA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	C	158	1298	805	253	238	2	0	0

- Molecule 2 is a protein called Large ribosomal subunit protein bL34.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	2	38	309	185	77	46	1	0	0

- Molecule 3 is a protein called Large ribosomal subunit protein bL36A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	4	38	302	185	65	48	4	0	0

- Molecule 4 is a RNA chain called 23S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
4	A	2576	55316	24673	10186	17881	2576	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
5	B	120	2572	1145	471	836	120	0	0

- Molecule 6 is a protein called 50S ribosomal protein L3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	D	173	1284	805	231	244	4	0	0

- Molecule 7 is a protein called Large ribosomal subunit protein uL4.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
7	E	176	1368	862	243	258	5	0	0

- Molecule 8 is a protein called Large ribosomal subunit protein uL5.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
8	F	177	1410	899	249	256	6	0	0

- Molecule 9 is a protein called Large ribosomal subunit protein uL6.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
9	G	176	1323	832	243	246	2	0	0

- Molecule 10 is a protein called Large ribosomal subunit protein bL9.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
10	H	51	395	253	72	69	1	0	0

- Molecule 11 is a protein called Large ribosomal subunit protein uL13.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
11	J	142	1129	714	212	199	4	0	0

- Molecule 12 is a protein called Large ribosomal subunit protein uL14.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
12	K	122	938	587	180	165	6	0	0

- Molecule 13 is a protein called Large ribosomal subunit protein uL15.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
13	L	143	1045	649	206	189	1	0	0

- Molecule 14 is a protein called Large ribosomal subunit protein bL17.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
14	N	120	960	593	196	166	5	0	0

- Molecule 15 is a protein called Large ribosomal subunit protein uL18.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
15	O	116	892	552	178	162		0	0

- Molecule 16 is a protein called Large ribosomal subunit protein bL19.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
16	P	114	917	574	179	163	1	0	0

- Molecule 17 is a protein called Large ribosomal subunit protein bL20.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
17	Q	117	947	604	192	151		0	0

- Molecule 18 is a protein called Large ribosomal subunit protein bL21.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
18	R	103	816	516	153	145	2	0	0

- Molecule 19 is a protein called Large ribosomal subunit protein uL23.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
19	T	93	738	466	139	131	2	0	0

- Molecule 20 is a protein called Large ribosomal subunit protein uL24.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
20	U	102	779	492	146	141		0	0

- Molecule 21 is a protein called Large ribosomal subunit protein bL25.

Mol	Chain	Residues	Atoms					AltConf	Trace
21	V	94	Total	C	N	O	S	0	0
			753	479	137	134	3		

- Molecule 22 is a protein called Large ribosomal subunit protein bL27.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	W	75	Total	C	N	O	S	0	0
			575	356	116	102	1		

- Molecule 23 is a protein called Large ribosomal subunit protein bL28.

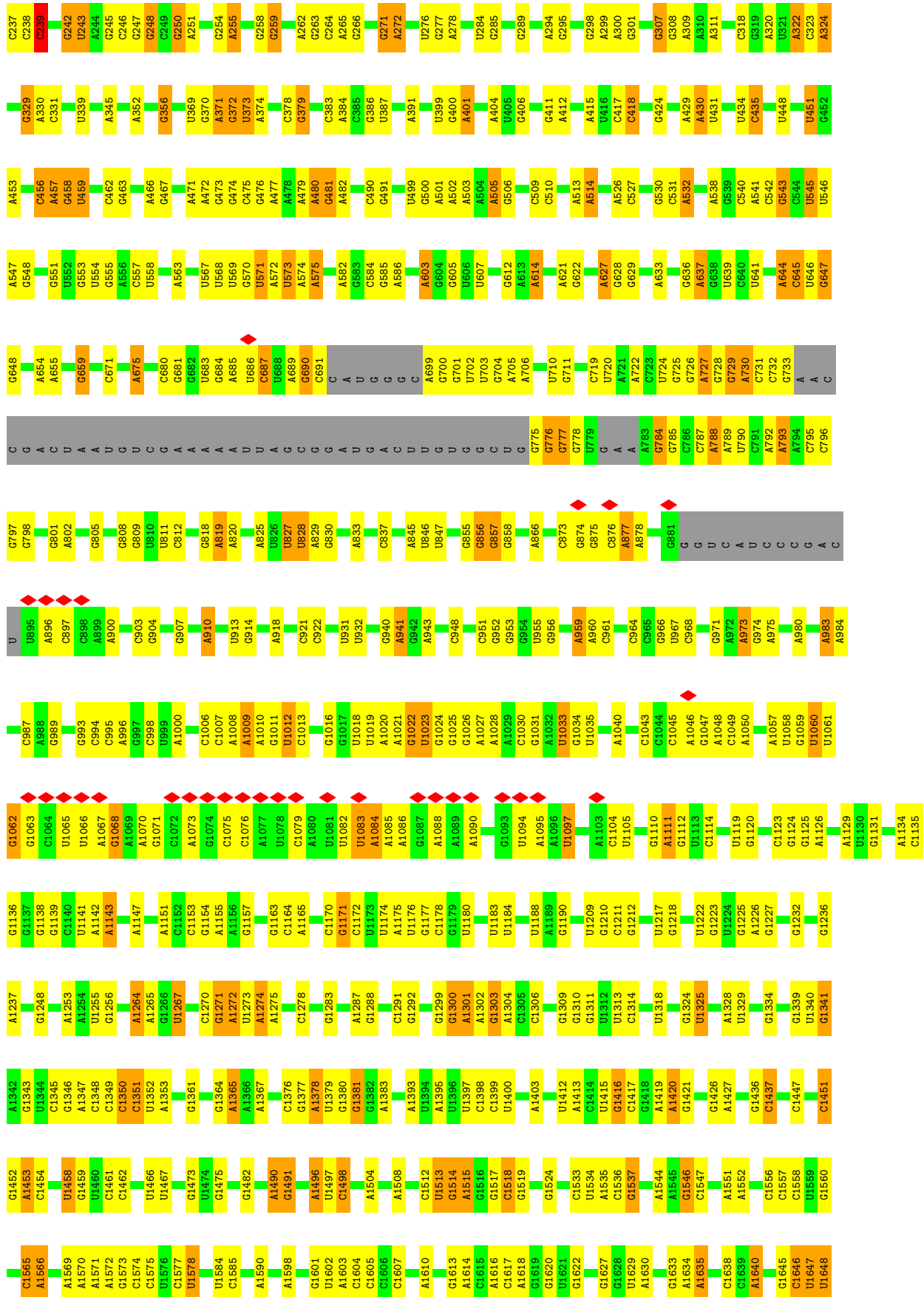
Mol	Chain	Residues	Atoms					AltConf	Trace
23	X	77	Total	C	N	O	S	0	0
			625	388	129	106	2		

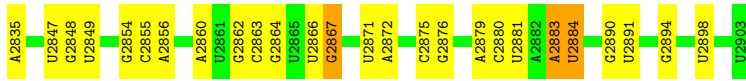
- Molecule 24 is a protein called Large ribosomal subunit protein uL29.

Mol	Chain	Residues	Atoms					AltConf	Trace
24	Y	63	Total	C	N	O	S	0	0
			509	313	99	95	2		

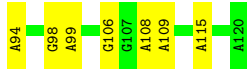
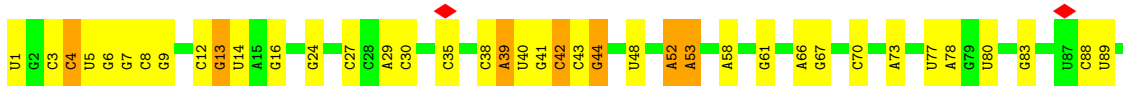
- Molecule 25 is a protein called Large ribosomal subunit protein uL30.

Mol	Chain	Residues	Atoms					AltConf	Trace
25	Z	58	Total	C	N	O	S	0	0
			449	281	87	79	2		

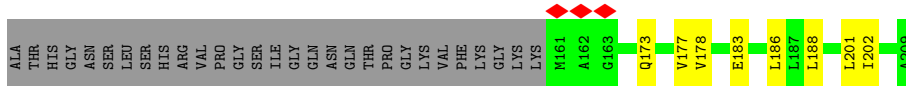
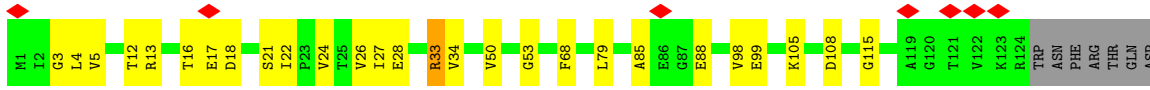




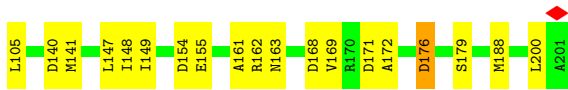
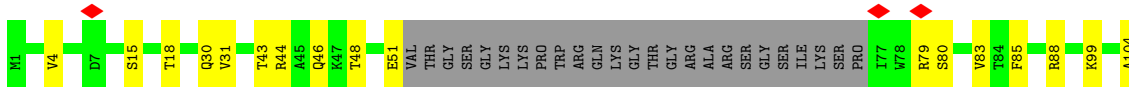
- Molecule 5: 5S ribosomal RNA



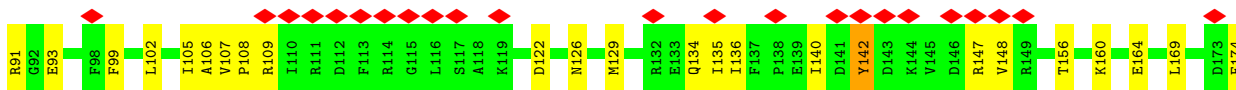
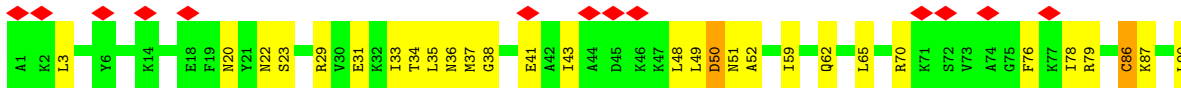
- Molecule 6: 50S ribosomal protein L3



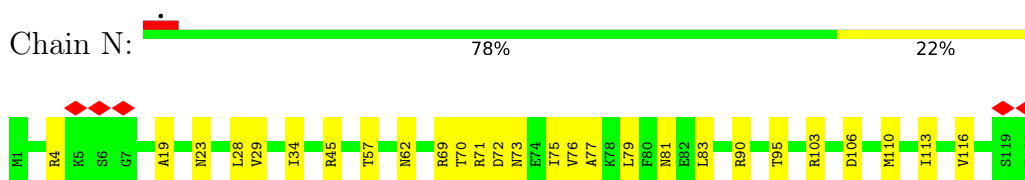
- Molecule 7: Large ribosomal subunit protein uL4



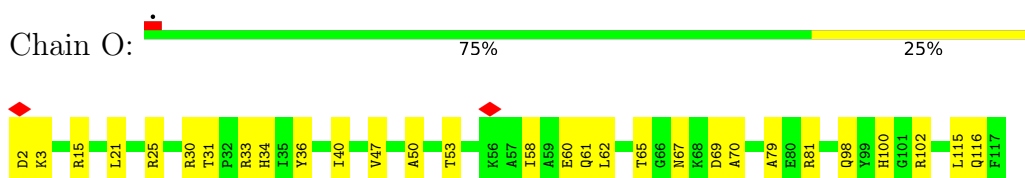
- Molecule 8: Large ribosomal subunit protein uL5



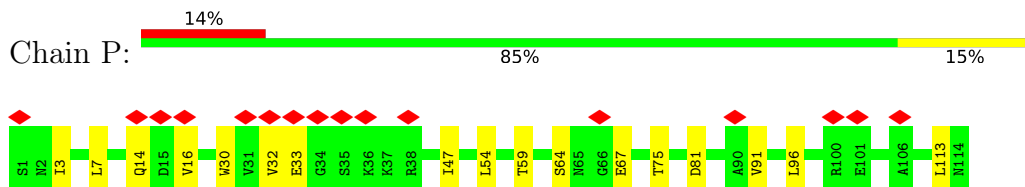
- Molecule 14: Large ribosomal subunit protein bL17



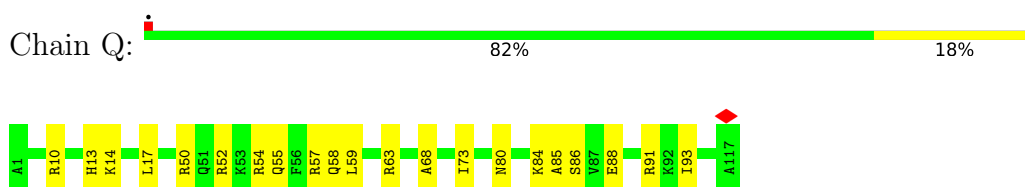
- Molecule 15: Large ribosomal subunit protein uL18



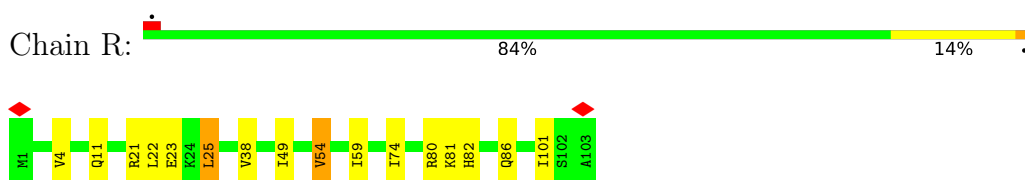
- Molecule 16: Large ribosomal subunit protein bL19



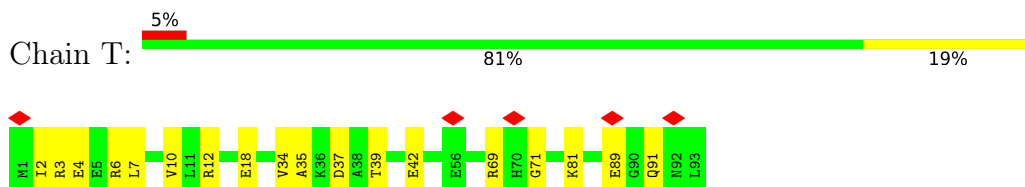
- Molecule 17: Large ribosomal subunit protein bL20



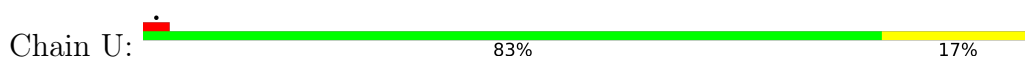
- Molecule 18: Large ribosomal subunit protein bL21

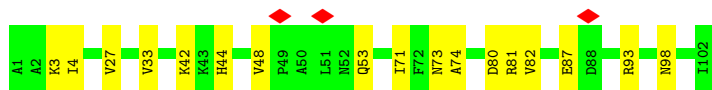


- Molecule 19: Large ribosomal subunit protein uL23

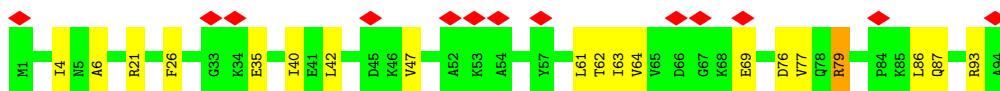
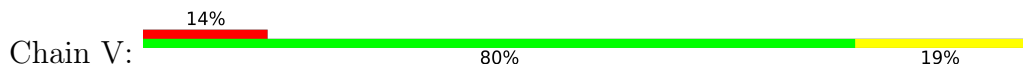


- Molecule 20: Large ribosomal subunit protein uL24

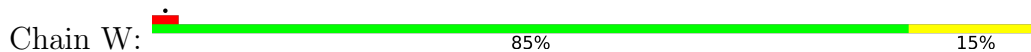




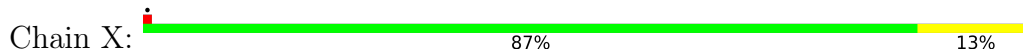
- Molecule 21: Large ribosomal subunit protein bL25



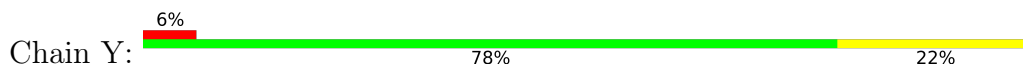
- Molecule 22: Large ribosomal subunit protein bL27



- Molecule 23: Large ribosomal subunit protein bL28



- Molecule 24: Large ribosomal subunit protein uL29



- Molecule 25: Large ribosomal subunit protein uL30



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	6435	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	TFS KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	45	Depositor
Minimum defocus (nm)	800	Depositor
Maximum defocus (nm)	2000	Depositor
Magnification	81000	Depositor
Image detector	GATAN K3 BIOQUANTUM (6k x 4k)	Depositor
Maximum map value	1.582	Depositor
Minimum map value	-0.376	Depositor
Average map value	0.002	Depositor
Map value standard deviation	0.091	Depositor
Recommended contour level	0.337	Depositor
Map size (Å)	424.0, 424.0, 424.0	wwPDB
Map dimensions	300, 300, 300	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.4133333, 1.4133333, 1.4133333	Depositor

5 Model quality i

5.1 Standard geometry i

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	C	0.23	0/1311	0.48	0/1753
2	2	0.23	0/310	0.65	0/405
3	4	0.25	0/303	0.55	0/397
4	A	0.19	1/61949 (0.0%)	0.75	25/96631 (0.0%)
5	B	0.24	1/2876 (0.0%)	0.70	0/4483
6	D	0.25	0/1296	0.52	0/1742
7	E	0.24	0/1382	0.47	0/1860
8	F	0.25	0/1434	0.52	0/1926
9	G	0.24	0/1343	0.49	0/1816
10	H	0.26	0/400	0.50	0/537
11	J	0.24	0/1152	0.49	0/1551
12	K	0.25	0/947	0.55	0/1268
13	L	0.25	0/1054	0.58	0/1403
14	N	0.24	0/973	0.58	0/1301
15	O	0.24	0/902	0.54	0/1209
16	P	0.24	0/929	0.54	0/1242
17	Q	0.24	0/960	0.51	0/1278
18	R	0.25	0/829	0.52	0/1107
19	T	0.24	0/744	0.50	0/994
20	U	0.25	0/787	0.50	0/1051
21	V	0.25	0/766	0.49	0/1025
22	W	0.24	0/582	0.54	0/769
23	X	0.24	0/635	0.56	0/848
24	Y	0.24	0/510	0.51	0/677
25	Z	0.24	0/453	0.54	0/605
All	All	0.21	2/84827 (0.0%)	0.70	25/127878 (0.0%)

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	B	1	U	OP3-P	-10.59	1.48	1.61
4	A	1	G	OP3-P	-10.56	1.48	1.61

All (25) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	A	921	C	N3-C2-O2	-10.15	114.79	121.90
4	A	921	C	N1-C2-O2	8.52	124.01	118.90
4	A	1351	C	N3-C2-O2	-7.80	116.44	121.90
4	A	239	C	N3-C2-O2	-7.35	116.76	121.90
4	A	2073	C	N3-C2-O2	-7.26	116.81	121.90
4	A	922	C	N3-C2-O2	-7.15	116.90	121.90
4	A	2771	C	N3-C2-O2	-7.02	116.98	121.90
4	A	856	G	N1-C2-N2	-6.87	110.02	116.20
4	A	2521	C	N3-C2-O2	-6.64	117.25	121.90
4	A	418	C	N3-C2-O2	-6.49	117.36	121.90
4	A	1727	C	N3-C2-O2	-6.42	117.41	121.90
4	A	1114	C	N3-C2-O2	-6.27	117.51	121.90
4	A	201	C	N1-C2-O2	6.21	122.63	118.90
4	A	856	G	N3-C2-N2	5.77	123.94	119.90
4	A	2437	G	N1-C2-N2	-5.71	111.06	116.20
4	A	2545	G	N1-C2-N2	-5.64	111.13	116.20
4	A	1381	G	N1-C2-N2	-5.51	111.24	116.20
4	A	259	G	N1-C2-N2	-5.39	111.35	116.20
4	A	2321	U	C2-N1-C1'	5.37	124.15	117.70
4	A	1350	C	N1-C2-O2	5.37	122.12	118.90
4	A	2520	C	N1-C2-O2	5.36	122.12	118.90
4	A	1734	G	N1-C2-N2	-5.18	111.53	116.20
4	A	1351	C	N1-C2-O2	5.12	121.97	118.90
4	A	201	C	N3-C2-O2	-5.07	118.35	121.90
4	A	1313	U	C2-N1-C1'	5.06	123.77	117.70

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	C	1298	0	1352	7	0
2	2	309	0	344	9	0
3	4	302	0	343	8	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
4	A	55316	0	27824	599	0
5	B	2572	0	1302	33	0
6	D	1284	0	1339	27	0
7	E	1368	0	1421	29	0
8	F	1410	0	1447	43	0
9	G	1323	0	1374	21	0
10	H	395	0	418	6	0
11	J	1129	0	1162	24	0
12	K	938	0	1012	17	0
13	L	1045	0	1117	22	0
14	N	960	0	1000	22	0
15	O	892	0	923	26	0
16	P	917	0	965	12	0
17	Q	947	0	1022	17	0
18	R	816	0	839	16	0
19	T	738	0	807	17	0
20	U	779	0	834	11	0
21	V	753	0	780	15	0
22	W	575	0	592	11	0
23	X	625	0	655	7	0
24	Y	509	0	543	8	0
25	Z	449	0	491	12	0
All	All	77649	0	49906	918	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 8.

All (918) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:A:775:G:OP2	4:A:778:G:O4'	1.54	1.25
4:A:775:G:O5'	4:A:777:G:N3	1.96	0.98
4:A:775:G:OP2	4:A:777:G:O2'	1.82	0.97
4:A:2123:G:C2	4:A:2176:A:N6	2.34	0.95
4:A:2676:C:O2	4:A:2732:G:N2	2.00	0.95
4:A:271:G:O2'	4:A:272:A:OP2	1.87	0.94
4:A:689:A:H3'	4:A:690:G:H5''	1.51	0.92
4:A:250:G:O2'	4:A:251:A:O4'	1.87	0.90
4:A:960:A:N3	4:A:2457:U:O2'	2.04	0.90
4:A:1172:C:O2	4:A:1177:G:N2	2.05	0.90
4:A:2377:A:O2'	4:A:2378:A:O4'	1.90	0.90

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:A:2898:U:O2'	11:J:134:ALA:O	1.89	0.89
4:A:2528:U:O4	4:A:2535:G:O6	1.88	0.89
4:A:1378:A:O2'	4:A:1380:G:N7	2.03	0.89
4:A:1007:C:OP2	4:A:1008:A:O2'	1.90	0.88
4:A:1650:A:O2'	4:A:1651:G:O4'	1.92	0.88
4:A:1324:G:O2'	4:A:1328:A:N6	2.07	0.88
4:A:161:A:O2'	4:A:2207:C:O2	1.91	0.87
4:A:1513:U:O2'	4:A:1514:G:O4'	1.93	0.86
4:A:675:A:N3	4:A:2443:C:O2'	2.09	0.86
4:A:700:G:H2'	4:A:701:G:C8	2.11	0.86
4:A:207:A:O2'	4:A:798:G:O2'	1.93	0.85
4:A:1462:C:O2'	4:A:2702:G:O2'	1.94	0.85
4:A:605:G:OP1	7:E:99:LYS:NZ	2.10	0.85
16:P:64:SER:OG	16:P:67:GLU:O	1.94	0.84
4:A:724:U:H4'	4:A:1566:A:H5'	1.60	0.84
4:A:1171:G:N2	4:A:1178:C:O2	2.11	0.83
4:A:2577:A:OP2	4:A:2610:C:O2'	1.96	0.83
4:A:1125:G:OP2	4:A:1126:A:O2'	1.96	0.83
4:A:2299:U:O4	4:A:2318:G:N2	2.11	0.83
4:A:2167:U:O2	4:A:2169:A:N7	2.10	0.83
4:A:1341:G:OP1	4:A:1602:U:O2'	1.97	0.83
6:D:33:ARG:NH2	6:D:53:GLY:O	2.12	0.83
4:A:612:G:N2	4:A:614:A:O2'	2.12	0.82
4:A:989:G:OP2	25:Z:11:SER:OG	1.97	0.82
4:A:48:G:N2	4:A:177:G:OP1	2.13	0.82
5:B:43:C:O2	8:F:91:ARG:NH1	2.12	0.82
7:E:46:GLN:O	7:E:88:ARG:NH2	2.13	0.81
4:A:1534:U:O2'	4:A:1537:G:O6	1.97	0.81
12:K:30:ARG:NH1	12:K:37:ASP:OD2	2.14	0.81
13:L:55:MET:O	13:L:60:ARG:NH1	2.13	0.81
4:A:126:A:O2'	4:A:127:A:O4'	1.97	0.81
4:A:1515:A:O2'	4:A:1556:C:O2	1.98	0.80
4:A:627:A:OP1	13:L:78:ARG:NH1	2.15	0.80
4:A:83:A:O2'	4:A:103:A:N6	2.15	0.80
4:A:2333:A:OP2	22:W:71:LYS:NZ	2.14	0.79
4:A:320:A:N3	7:E:163:ASN:ND2	2.31	0.79
9:G:29:ASN:ND2	9:G:77:GLY:O	2.15	0.79
4:A:2659:G:N2	4:A:2662:A:OP2	2.16	0.79
4:A:784:G:O2'	4:A:790:U:O2'	2.00	0.79
4:A:2457:U:O2	4:A:2495:G:O6	2.00	0.79
4:A:820:A:OP2	4:A:973:A:N6	2.16	0.79

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:A:966:G:O4'	4:A:2267:A:N6	2.16	0.79
4:A:2258:C:O2'	4:A:2427:C:OP2	1.99	0.79
4:A:1513:U:O2'	4:A:1514:G:O5'	2.00	0.79
4:A:2479:U:OP1	4:A:2537:U:O2'	2.00	0.79
5:B:38:C:O2	5:B:44:G:N2	2.16	0.78
4:A:951:C:N4	4:A:952:G:O6	2.17	0.78
19:T:6:ARG:O	19:T:10:VAL:HG13	1.84	0.78
4:A:2291:U:O2'	4:A:2374:C:O2	2.02	0.78
4:A:2776:A:O2'	4:A:2782:G:N7	2.15	0.78
4:A:910:A:O2'	4:A:2264:C:O2'	2.00	0.77
4:A:300:A:O2'	4:A:318:C:O2	2.01	0.77
4:A:2788:C:O2'	4:A:2809:A:N3	2.17	0.77
4:A:2092:U:O4	4:A:2227:A:N6	2.17	0.77
4:A:1009:A:O2'	4:A:1010:A:O4'	2.00	0.77
4:A:983:A:N6	4:A:2030:A:OP1	2.18	0.77
4:A:1648:U:O2'	4:A:1650:A:OP1	2.01	0.77
4:A:973:A:OP2	18:R:81:LYS:NZ	2.18	0.76
4:A:2110:G:N2	4:A:2180:U:O4	2.18	0.76
6:D:16:THR:OG1	6:D:18:ASP:OD1	2.01	0.76
4:A:234:U:O4	4:A:263:G:N2	2.19	0.76
4:A:1019:U:OP1	4:A:1035:U:O2'	2.04	0.76
4:A:1217:U:O2	4:A:1232:G:O6	2.04	0.76
19:T:91:GLN:N	19:T:91:GLN:OE1	2.19	0.75
4:A:1009:A:O4'	17:Q:58:GLN:NE2	2.20	0.75
3:4:21:GLY:O	4:A:1123:C:O2'	2.05	0.74
4:A:2115:G:N2	4:A:2118:U:OP2	2.20	0.74
4:A:18:U:O4	4:A:19:A:N6	2.20	0.74
4:A:2692:G:N3	4:A:2847:U:O2'	2.21	0.74
5:B:52:A:O2'	5:B:53:A:O5'	2.03	0.74
21:V:6:ALA:HB2	21:V:63:ILE:HD11	1.69	0.74
5:B:38:C:N3	5:B:44:G:N1	2.36	0.74
4:A:2849:U:O4'	4:A:2867:G:N2	2.21	0.74
10:H:14:SER:OG	10:H:17:ASP:OD2	2.05	0.74
9:G:88:LEU:O	9:G:128:THR:OG1	2.05	0.73
4:A:918:A:N3	5:B:80:U:O2'	2.21	0.73
8:F:51:ASN:OD1	8:F:52:ALA:N	2.21	0.73
4:A:2111:U:O4'	4:A:2118:U:O2'	2.06	0.73
4:A:775:G:O5'	4:A:777:G:H1'	1.89	0.73
4:A:993:G:OP2	17:Q:50:ARG:NH2	2.22	0.73
12:K:9:ASN:OD1	12:K:18:ARG:NH1	2.21	0.73
2:2:14:ARG:NH1	4:A:125:A:OP1	2.22	0.72

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:A:475:C:O2	4:A:479:A:N6	2.22	0.72
4:A:2679:A:N6	4:A:2729:G:O6	2.22	0.72
14:N:77:ALA:O	14:N:81:ASN:ND2	2.21	0.72
4:A:111:A:O2'	24:Y:58:ASN:OD1	2.06	0.72
4:A:1171:G:N1	4:A:1178:C:N3	2.38	0.72
4:A:1225:G:O2'	4:A:1226:A:O4'	2.05	0.72
4:A:2265:U:OP2	4:A:2266:A:O2'	2.05	0.72
4:A:2066:C:N4	4:A:2067:G:O6	2.22	0.72
4:A:2077:A:N3	4:A:2434:A:O2'	2.20	0.72
4:A:2017:U:O2'	4:A:2019:A:OP2	2.02	0.72
4:A:629:G:N3	4:A:639:U:O2'	2.23	0.71
4:A:680:C:N4	4:A:681:G:O6	2.23	0.71
4:A:1131:G:O6	4:A:2024:G:O2'	2.06	0.71
4:A:2682:A:N1	4:A:2728:U:O2'	2.23	0.71
4:A:216:A:N7	4:A:431:U:O2	2.23	0.71
4:A:541:A:N6	4:A:553:G:O6	2.24	0.71
4:A:2819:G:O3'	14:N:4:ARG:NH1	2.24	0.71
4:A:2528:U:OP2	4:A:2530:A:N6	2.23	0.71
4:A:1139:G:OP1	11:J:74:TYR:OH	2.07	0.70
4:A:220:G:HO2'	4:A:233:A:HO2'	1.39	0.70
4:A:2692:G:N2	4:A:2847:U:O3'	2.24	0.70
13:L:29:LYS:O	13:L:30:THR:OG1	2.08	0.70
4:A:775:G:OP2	4:A:777:G:C2'	2.39	0.70
4:A:1222:U:O2	4:A:1227:G:O6	2.08	0.70
4:A:1288:G:OP2	4:A:1288:G:N2	2.25	0.70
8:F:62:GLN:OE1	8:F:62:GLN:N	2.24	0.69
4:A:284:U:O2	4:A:356:G:O6	2.10	0.69
4:A:378:C:N4	4:A:379:G:O6	2.24	0.69
9:G:41:GLU:OE2	9:G:54:ARG:NH1	2.25	0.69
12:K:106:GLU:OE1	12:K:106:GLU:N	2.26	0.69
25:Z:46:MET:O	25:Z:50:VAL:HG22	1.91	0.69
4:A:81:G:O2'	4:A:295:G:O2'	2.10	0.69
4:A:998:C:OP2	17:Q:57:ARG:NH2	2.26	0.69
4:A:237:C:N4	4:A:238:C:N4	2.40	0.69
4:A:941:A:O2'	4:A:1190:G:O3'	2.10	0.69
8:F:59:ILE:HG12	8:F:140:ILE:HD11	1.74	0.69
4:A:730:A:H2'	4:A:731:C:C6	2.27	0.69
4:A:2687:U:O2	4:A:2722:G:O6	2.11	0.69
2:2:19:ARG:NH1	4:A:125:A:OP2	2.26	0.69
4:A:584:C:N4	4:A:585:G:O6	2.26	0.68
4:A:570:G:OP1	18:R:80:ARG:NH2	2.25	0.68

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:A:453:A:N3	4:A:457:A:O2'	2.26	0.68
4:A:1604:C:C4	4:A:1605:C:N4	2.62	0.68
4:A:2043:C:OP1	4:A:2777:G:O2'	2.07	0.68
4:A:633:A:O2'	4:A:2404:U:OP1	2.12	0.68
21:V:35:GLU:OE2	21:V:93:ARG:NH1	2.27	0.68
4:A:585:G:O2'	4:A:586:A:O4'	2.11	0.68
5:B:77:U:O2	5:B:99:A:N7	2.27	0.68
4:A:18:U:O2'	4:A:554:U:OP1	2.10	0.68
4:A:1604:C:O2'	4:A:1610:A:N1	2.25	0.67
4:A:2061:G:O2'	4:A:2063:C:OP2	2.11	0.67
4:A:457:A:N7	4:A:472:A:N6	2.42	0.67
12:K:93:GLN:N	12:K:93:GLN:OE1	2.27	0.67
4:A:2849:U:O2'	4:A:2866:U:O2	2.09	0.67
9:G:100:ASN:ND2	9:G:115:GLN:OE1	2.26	0.67
4:A:243:U:N3	4:A:255:A:C8	2.62	0.67
4:A:227:A:O2'	4:A:228:C:O5'	2.08	0.67
4:A:571:U:OP1	18:R:80:ARG:NE	2.27	0.67
4:A:2161:C:O2'	4:A:2173:A:O4'	2.09	0.67
4:A:383:C:N3	4:A:391:A:N6	2.42	0.67
4:A:1352:U:O2'	4:A:1570:A:N3	2.28	0.67
4:A:1687:G:H2'	4:A:1701:A:H61	1.60	0.67
4:A:1287:A:O2'	4:A:1288:G:O4'	2.12	0.67
4:A:2676:C:C2	4:A:2732:G:N2	2.61	0.67
4:A:1018:U:O2'	4:A:1120:G:N2	2.28	0.67
4:A:1416:G:O2'	4:A:1417:C:O5'	2.11	0.67
15:O:60:GLU:OE1	15:O:60:GLU:N	2.27	0.67
4:A:2424:C:O2	4:A:2429:G:O2'	2.09	0.66
4:A:2588:G:O6	4:A:2589:A:N6	2.29	0.66
17:Q:93:ILE:HG21	18:R:4:VAL:HG11	1.78	0.66
4:A:2629:U:O2'	4:A:2630:G:O5'	2.14	0.66
4:A:1613:G:O2'	4:A:2008:C:N4	2.29	0.66
7:E:176:ASP:OD1	7:E:179:SER:OG	2.12	0.66
4:A:1466:U:O2'	4:A:1546:G:O2'	2.05	0.66
4:A:777:G:H2'	4:A:778:G:H8	1.61	0.66
4:A:1022:G:N2	4:A:1023:U:O4	2.27	0.66
18:R:49:ILE:HG22	18:R:54:VAL:HG12	1.78	0.66
4:A:1016:G:O6	4:A:1147:A:N6	2.29	0.66
4:A:1447:C:O2'	4:A:1544:A:N3	2.26	0.65
8:F:31:GLU:OE2	8:F:156:THR:OG1	2.08	0.65
11:J:15:TRP:O	11:J:138:GLN:NE2	2.29	0.65
4:A:462:C:N4	4:A:463:G:O6	2.29	0.65

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
12:K:70:ARG:HD2	12:K:76:VAL:HG12	1.79	0.65
4:A:777:G:H2'	4:A:778:G:C8	2.32	0.65
4:A:1062:G:O2'	4:A:1063:G:O4'	2.15	0.65
4:A:700:G:H2'	4:A:701:G:H8	1.61	0.65
4:A:1172:C:N3	4:A:1177:G:N1	2.40	0.65
4:A:1604:C:N4	4:A:1605:C:N4	2.45	0.65
4:A:1209:U:O2'	4:A:1237:A:N1	2.30	0.64
4:A:1721:G:H21	4:A:1739:A:H62	1.45	0.64
4:A:117:G:OP2	4:A:119:A:O2'	2.07	0.64
4:A:873:C:N4	4:A:874:G:O6	2.31	0.64
1:C:83:GLN:OE1	4:A:2422:C:O2'	2.13	0.64
4:A:192:C:O2'	4:A:802:A:N3	2.30	0.64
4:A:910:A:HO2'	4:A:2264:C:HO2'	1.42	0.64
8:F:22:ASN:OD1	8:F:23:SER:N	2.31	0.64
4:A:65:U:O2'	4:A:456:C:O2	2.12	0.64
4:A:1126:A:OP1	4:A:2487:G:O2'	2.15	0.64
19:T:12:ARG:NH2	19:T:34:VAL:O	2.30	0.64
4:A:188:G:O2'	4:A:1365:A:N6	2.31	0.64
4:A:627:A:N6	4:A:637:A:O5'	2.28	0.64
4:A:1992:G:N3	4:A:1994:C:N4	2.45	0.64
7:E:48:THR:OG1	7:E:51:GLU:OE1	2.16	0.64
4:A:2854:G:N1	4:A:2864:G:O6	2.31	0.64
11:J:31:GLU:CG	11:J:142:ILE:HD12	2.28	0.64
5:B:5:U:OP1	5:B:61:G:O2'	2.07	0.63
5:B:40:U:N3	5:B:44:G:OP2	2.30	0.63
9:G:128:THR:HG23	9:G:129:GLU:OE1	1.98	0.63
5:B:14:U:OP2	5:B:70:C:O2'	2.16	0.63
4:A:2270:A:O2'	22:W:16:ARG:NH1	2.32	0.63
4:A:702:U:H2'	4:A:703:U:C6	2.34	0.63
4:A:1272:A:O2'	4:A:1274:A:OP1	2.17	0.63
4:A:1353:A:N7	4:A:1377:G:N2	2.46	0.63
4:A:2123:G:C2	4:A:2176:A:C6	2.86	0.63
4:A:2731:G:O2'	4:A:2732:G:O5'	2.16	0.63
6:D:26:VAL:HG12	6:D:186:LEU:HD12	1.79	0.63
4:A:775:G:OP2	4:A:778:G:C1'	2.46	0.63
4:A:1218:G:N1	4:A:1232:G:N7	2.47	0.63
11:J:13:ARG:NH2	11:J:49:ASP:O	2.32	0.63
4:A:959:A:O2'	4:A:960:A:O4'	2.13	0.62
4:A:1364:G:N2	4:A:1367:A:OP2	2.28	0.62
4:A:2457:U:O2	4:A:2495:G:C6	2.52	0.62
4:A:2508:G:O6	4:A:2580:U:O2	2.16	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
21:V:64:VAL:HG22	21:V:69:GLU:OE1	1.98	0.62
4:A:1030:C:N4	4:A:1031:G:O6	2.31	0.62
4:A:2039:U:OP1	11:J:111:LYS:NZ	2.16	0.62
4:A:2821:A:OP2	6:D:115:GLY:N	2.31	0.62
6:D:99:GLU:N	6:D:99:GLU:OE1	2.31	0.62
7:E:140:ASP:OD1	7:E:141:MET:N	2.32	0.62
8:F:41:GLU:OE2	8:F:147:ARG:NH2	2.31	0.62
4:A:943:A:OP1	13:L:35:HIS:ND1	2.33	0.62
4:A:1006:C:O3'	11:J:39:LYS:NZ	2.31	0.62
6:D:183:GLU:OE1	6:D:183:GLU:N	2.33	0.62
12:K:108:ARG:NH2	16:P:32:VAL:O	2.32	0.62
4:A:2345:G:O2'	4:A:2381:A:N3	2.29	0.62
4:A:227:A:HO2'	4:A:228:C:P	2.22	0.62
4:A:1271:G:N1	4:A:1325:U:OP1	2.32	0.62
4:A:1614:A:N6	4:A:2010:G:O5'	2.31	0.62
15:O:69:ASP:OD1	15:O:70:ALA:N	2.33	0.62
15:O:116:GLN:N	15:O:116:GLN:OE1	2.32	0.62
5:B:48:U:OP1	15:O:30:ARG:NH2	2.33	0.61
25:Z:15:ARG:O	25:Z:20:LYS:NZ	2.33	0.61
21:V:21:ARG:NH2	21:V:87:GLN:O	2.34	0.61
25:Z:55:LYS:NZ	25:Z:57:GLU:OE2	2.32	0.61
4:A:2261:C:OP1	22:W:15:LYS:NZ	2.21	0.61
4:A:2816:G:N3	4:A:2883:A:O2'	2.26	0.61
15:O:21:LEU:HD23	15:O:21:LEU:O	2.01	0.61
6:D:88:GLU:N	6:D:88:GLU:OE1	2.34	0.61
4:A:543:G:O6	4:A:551:G:N1	2.33	0.61
4:A:1565:C:O2'	4:A:1566:A:O5'	2.19	0.60
11:J:31:GLU:HG3	11:J:142:ILE:HD12	1.82	0.60
25:Z:3:THR:HG23	25:Z:36:GLU:CD	2.21	0.60
4:A:725:G:H2'	4:A:726:G:H5'	1.82	0.60
4:A:2123:G:N2	4:A:2176:A:N6	2.49	0.60
16:P:33:GLU:N	16:P:33:GLU:OE1	2.34	0.60
4:A:1700:A:H3'	4:A:1701:A:H8	1.67	0.60
12:K:58:LEU:HD11	12:K:86:LEU:HD12	1.84	0.60
4:A:237:C:N4	4:A:238:C:H41	2.00	0.60
4:A:582:A:OP1	17:Q:10:ARG:NH1	2.35	0.60
4:A:948:C:O2	4:A:984:A:O2'	2.19	0.60
4:A:2581:G:N2	4:A:2608:G:OP1	2.35	0.60
7:E:31:VAL:HG21	7:E:104:ALA:CB	2.32	0.60
7:E:31:VAL:HG21	7:E:104:ALA:HB2	1.84	0.60
12:K:12:ASP:HB3	12:K:99:ILE:HG22	1.84	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:A:829:A:N7	4:A:2247:A:O2'	2.34	0.59
4:A:2312:U:O2	8:F:36:ASN:ND2	2.35	0.59
4:A:2314:A:OP1	8:F:87:LYS:NZ	2.29	0.59
4:A:2623:G:OP1	4:A:2826:A:O2'	2.18	0.59
2:2:22:MET:O	2:2:28:ARG:NH2	2.34	0.59
4:A:245:G:O2'	4:A:384:A:N1	2.33	0.59
4:A:526:A:O2'	4:A:2043:C:O2	2.21	0.59
4:A:399:U:OP2	23:X:56:ARG:NH1	2.34	0.59
4:A:2638:G:O2'	4:A:2778:A:N6	2.34	0.59
4:A:2676:C:N3	4:A:2732:G:N1	2.50	0.59
4:A:729:G:H1'	4:A:730:A:O4'	2.03	0.59
4:A:222:A:N6	4:A:232:G:O2'	2.34	0.59
4:A:1666:G:O2'	4:A:1667:G:N3	2.28	0.59
4:A:1667:G:O2'	4:A:1668:A:OP2	2.17	0.59
15:O:30:ARG:NH2	15:O:98:GLN:OE1	2.36	0.59
17:Q:88:GLU:O	18:R:11:GLN:NE2	2.34	0.59
20:U:48:VAL:O	20:U:53:GLN:NE2	2.35	0.59
4:A:1264:A:N6	4:A:2014:A:OP2	2.36	0.59
4:A:1270:C:O2	4:A:1325:U:O2'	2.09	0.59
17:Q:80:ASN:OD1	17:Q:84:LYS:NZ	2.34	0.59
4:A:627:A:O4'	4:A:637:A:N6	2.36	0.59
4:A:1701:A:H3'	4:A:1702:G:H8	1.68	0.59
11:J:49:ASP:OD1	11:J:121:LYS:NZ	2.29	0.59
13:L:93:ASN:OD1	13:L:94:THR:N	2.35	0.59
4:A:1223:G:N2	4:A:1226:A:OP2	2.34	0.59
5:B:39:A:O2'	5:B:40:U:O4'	2.20	0.59
9:G:122:ALA:HB1	9:G:130:ILE:HD11	1.86	0.58
6:D:26:VAL:CG1	6:D:186:LEU:HD12	2.34	0.58
4:A:728:G:H2'	4:A:729:G:C4	2.38	0.58
11:J:100:VAL:HG13	11:J:101:ILE:HD12	1.85	0.58
23:X:29:LEU:HD23	23:X:29:LEU:H	1.68	0.58
4:A:1094:U:N3	4:A:1097:U:OP2	2.36	0.58
14:N:19:ALA:O	14:N:23:ASN:ND2	2.36	0.58
4:A:301:G:OP2	20:U:81:ARG:NH2	2.36	0.58
1:C:140:TRP:NE1	1:C:182:GLU:OE1	2.37	0.58
21:V:62:THR:OG1	21:V:69:GLU:OE2	2.12	0.58
4:A:2058:A:N6	4:A:2610:C:O4'	2.36	0.58
9:G:154:GLU:OE1	9:G:156:TYR:N	2.37	0.57
4:A:2474:U:O4	4:A:2529:G:N2	2.37	0.57
23:X:6:VAL:HG21	23:X:58:ILE:HD11	1.86	0.57
4:A:2375:G:N2	4:A:2378:A:OP2	2.37	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:A:1033:U:C2	4:A:2750:A:N6	2.73	0.57
25:Z:1:ALA:N	25:Z:39:ASP:O	2.38	0.57
4:A:2093:G:O2'	4:A:2198:A:N1	2.33	0.57
4:A:1413:A:N1	4:A:1590:A:N6	2.53	0.57
4:A:2637:U:O4	4:A:2776:A:N7	2.38	0.57
4:A:2314:A:H5'	8:F:34:THR:HG21	1.87	0.57
4:A:1278:C:H5''	14:N:34:ILE:HD11	1.87	0.57
4:A:1068:G:N2	4:A:1095:A:O2'	2.38	0.56
4:A:1613:G:HO2'	4:A:2008:C:N4	2.02	0.56
4:A:2457:U:C2	4:A:2495:G:O6	2.58	0.56
4:A:72:U:OP1	24:Y:54:LYS:NZ	2.29	0.56
4:A:1458:U:OP2	4:A:1459:G:N2	2.37	0.56
4:A:2587:A:OP2	4:A:2608:G:N2	2.39	0.56
15:O:31:THR:O	15:O:102:ARG:NH2	2.38	0.56
4:A:1000:A:OP2	4:A:1154:G:N1	2.37	0.56
4:A:1048:A:O2'	4:A:1112:G:N2	2.38	0.56
6:D:34:VAL:HA	6:D:50:VAL:HG12	1.88	0.56
8:F:160:LYS:N	8:F:164:GLU:OE2	2.36	0.56
12:K:58:LEU:HD12	12:K:87:LEU:O	2.05	0.56
12:K:37:ASP:OD1	12:K:38:ILE:N	2.39	0.56
4:A:644:A:O2'	4:A:645:C:O5'	2.17	0.56
4:A:819:A:HO2'	4:A:837:C:HO2'	1.50	0.56
4:A:1351:C:O2'	4:A:1571:A:O2'	2.00	0.56
15:O:31:THR:OG1	15:O:33:ARG:O	2.23	0.56
4:A:2076:U:OP2	4:A:2238:G:N2	2.38	0.56
4:A:2298:A:OP1	8:F:70:ARG:NH1	2.35	0.56
4:A:2627:G:O2'	4:A:2628:C:O4'	2.20	0.56
4:A:2831:G:N2	4:A:2884:U:OP2	2.29	0.56
4:A:2090:A:N6	4:A:2230:G:O6	2.38	0.56
12:K:7:MET:C	12:K:8:LEU:HD12	2.26	0.56
18:R:38:VAL:O	18:R:54:VAL:HG13	2.05	0.56
4:A:784:G:N2	4:A:793:A:OP2	2.37	0.56
21:V:26:PHE:CZ	21:V:47:VAL:HG11	2.41	0.56
4:A:271:G:O2'	4:A:272:A:P	2.64	0.56
4:A:586:A:N1	4:A:809:G:O2'	2.31	0.55
4:A:796:C:N4	4:A:797:G:O6	2.39	0.55
7:E:176:ASP:OD1	7:E:176:ASP:N	2.39	0.55
4:A:189:G:O6	4:A:205:G:O2'	2.11	0.55
4:A:374:A:N6	4:A:400:G:O2'	2.39	0.55
6:D:3:GLY:C	6:D:4:LEU:HD12	2.27	0.55
9:G:51:PHE:CE2	9:G:71:LEU:HD22	2.41	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:A:775:G:P	4:A:777:G:N3	2.80	0.55
4:A:1732:C:O2'	4:A:1733:G:OP1	2.18	0.55
4:A:68:G:N2	4:A:74:A:O5'	2.39	0.55
4:A:1024:G:OP2	4:A:1025:G:O2'	2.14	0.55
4:A:1604:C:N4	4:A:1605:C:H41	2.04	0.55
4:A:2684:U:O2'	12:K:78:ARG:NH2	2.35	0.55
11:J:135:GLN:N	11:J:135:GLN:OE1	2.40	0.55
4:A:647:G:N2	4:A:2350:C:O2'	2.40	0.55
4:A:1426:G:O2'	4:A:1572:A:N6	2.39	0.55
4:A:243:U:C2	4:A:255:A:N7	2.75	0.55
4:A:2637:U:H3	4:A:2776:A:H62	1.55	0.55
8:F:140:ILE:HG22	8:F:142:TYR:H	1.72	0.55
20:U:87:GLU:OE1	20:U:87:GLU:N	2.40	0.55
2:2:39:ARG:NH2	4:A:467:G:O6	2.40	0.55
4:A:2303:G:O6	4:A:2314:A:N6	2.40	0.55
4:A:776:G:H4'	4:A:777:G:C8	2.42	0.54
4:A:2576:G:O2'	4:A:2611:C:OP2	2.21	0.54
25:Z:3:THR:HG23	25:Z:36:GLU:OE2	2.07	0.54
4:A:1033:U:N3	4:A:2750:A:C6	2.76	0.54
6:D:24:VAL:HG12	6:D:178:VAL:HG21	1.90	0.54
16:P:30:TRP:NE1	16:P:81:ASP:OD2	2.40	0.54
19:T:4:GLU:HG3	24:Y:18:LEU:HD11	1.89	0.54
13:L:23:ILE:HD12	18:R:82:HIS:NE2	2.20	0.54
13:L:23:ILE:HG23	18:R:82:HIS:CE1	2.42	0.54
20:U:71:ILE:HD12	20:U:82:VAL:HG21	1.88	0.54
4:A:448:U:O4'	7:E:79:ARG:NE	2.41	0.54
4:A:140:C:OP2	4:A:141:G:N2	2.41	0.54
4:A:476:G:N1	4:A:479:A:OP2	2.39	0.54
11:J:17:VAL:HG23	11:J:137:PRO:HB2	1.89	0.54
14:N:29:VAL:HG11	14:N:75:ILE:HG23	1.90	0.54
4:A:216:A:N7	4:A:431:U:C2	2.76	0.54
4:A:271:G:HO2'	4:A:272:A:P	2.25	0.54
4:A:1572:A:C2	4:A:1573:G:C8	2.95	0.54
4:A:2595:G:O2'	4:A:2598:A:OP1	2.25	0.54
21:V:4:ILE:O	21:V:63:ILE:HD12	2.08	0.54
4:A:2123:G:N2	4:A:2176:A:C6	2.75	0.54
4:A:2472:G:N2	4:A:2479:U:O4	2.40	0.54
14:N:116:VAL:HG23	14:N:116:VAL:O	2.08	0.54
4:A:2094:A:O4'	4:A:2198:A:N6	2.39	0.54
4:A:953:G:O2'	4:A:2266:A:OP2	2.16	0.54
4:A:1300:G:O2'	4:A:1635:A:OP1	2.23	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:A:2375:G:O2'	4:A:2377:A:N6	2.41	0.54
16:P:54:LEU:HD23	16:P:54:LEU:O	2.07	0.54
15:O:67:ASN:ND2	15:O:69:ASP:OD1	2.42	0.53
4:A:2499:C:O2'	4:A:2500:U:O4'	2.22	0.53
7:E:171:ASP:OD1	7:E:172:ALA:N	2.39	0.53
19:T:69:ARG:NH1	19:T:71:GLY:O	2.40	0.53
25:Z:4:ILE:HD11	25:Z:56:VAL:CG2	2.38	0.53
5:B:52:A:HO2'	5:B:53:A:P	2.32	0.53
7:E:79:ARG:O	7:E:80:SER:OG	2.23	0.53
4:A:1656:C:O2'	4:A:1657:U:O5'	2.22	0.53
4:A:1726:C:H2'	4:A:1727:C:O4'	2.08	0.53
22:W:7:ARG:NH1	22:W:8:ASN:OD1	2.42	0.53
4:A:482:A:N6	4:A:506:G:O2'	2.42	0.53
4:A:568:U:O4	18:R:80:ARG:NH1	2.38	0.53
5:B:38:C:O4'	15:O:100:HIS:NE2	2.42	0.53
3:4:4:ARG:NH2	4:A:2477:U:O2	2.42	0.52
4:A:2167:U:N3	4:A:2169:A:OP2	2.42	0.52
4:A:2167:U:C2	4:A:2169:A:N7	2.78	0.52
20:U:80:ASP:OD1	20:U:81:ARG:N	2.41	0.52
4:A:1139:G:O2'	4:A:1143:A:N1	2.43	0.52
4:A:1730:C:O2'	4:A:1731:G:P	2.67	0.52
4:A:2808:G:O3'	4:A:2890:G:N1	2.42	0.52
8:F:50:ASP:OD1	8:F:51:ASN:N	2.42	0.52
7:E:155:GLU:OE1	7:E:155:GLU:N	2.39	0.52
13:L:38:GLN:NE2	13:L:45:GLY:O	2.42	0.52
20:U:3:LYS:O	20:U:93:ARG:NH1	2.41	0.52
4:A:538:A:O2'	11:J:9:GLU:OE1	2.28	0.52
4:A:1341:G:OP1	4:A:1397:U:N3	2.42	0.52
4:A:1350:C:H2'	4:A:1351:C:O4'	2.10	0.52
4:A:2349:G:O6	4:A:2369:A:N6	2.43	0.52
5:B:52:A:O2'	5:B:53:A:P	2.68	0.52
4:A:204:A:O2'	4:A:205:G:OP2	2.28	0.52
4:A:289:G:O6	4:A:352:A:N6	2.43	0.52
4:A:1318:U:O2	4:A:1334:G:O6	2.27	0.52
4:A:2730:C:H2'	4:A:2731:G:C8	2.44	0.52
19:T:7:LEU:O	19:T:10:VAL:HG22	2.09	0.52
4:A:298:G:O2'	4:A:322:A:N1	2.31	0.52
15:O:61:GLN:O	15:O:62:LEU:HD22	2.09	0.52
4:A:481:G:OP2	20:U:44:HIS:N	2.42	0.51
4:A:644:A:HO2'	4:A:645:C:P	2.32	0.51
4:A:1048:A:N6	4:A:1110:G:O2'	2.43	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:A:2091:C:H5	4:A:2092:U:HO2'	1.57	0.51
7:E:51:GLU:OE1	7:E:51:GLU:N	2.43	0.51
4:A:2497:A:N3	4:A:2498:C:N4	2.57	0.51
16:P:14:GLN:OE1	16:P:14:GLN:N	2.44	0.51
4:A:827:U:OP2	4:A:828:U:N3	2.43	0.51
4:A:1668:A:H62	4:A:1704:C:H4'	1.74	0.51
21:V:76:ASP:OD1	21:V:77:VAL:N	2.44	0.51
4:A:373:U:O4	4:A:401:A:N7	2.43	0.51
4:A:1416:G:O2'	4:A:1417:C:O4'	2.28	0.51
4:A:1730:C:O2'	4:A:1731:G:OP2	2.24	0.51
5:B:38:C:N4	5:B:44:G:O6	2.41	0.51
13:L:95:LEU:HD11	13:L:100:ILE:HD11	1.93	0.51
24:Y:35:GLY:O	24:Y:38:GLN:NE2	2.44	0.51
4:A:2854:G:H2'	4:A:2855:C:C6	2.46	0.51
7:E:4:VAL:HG23	7:E:4:VAL:O	2.11	0.51
14:N:34:ILE:HG23	14:N:113:ILE:CG2	2.40	0.51
15:O:61:GLN:C	15:O:62:LEU:HD22	2.31	0.51
15:O:58:ILE:O	15:O:62:LEU:HD23	2.11	0.51
4:A:237:C:C4	4:A:238:C:N4	2.79	0.50
4:A:1008:A:N3	4:A:1009:A:N6	2.55	0.50
4:A:2047:C:O2'	4:A:2823:A:N1	2.43	0.50
4:A:2260:C:O2	4:A:2388:A:O2'	2.27	0.50
13:L:23:ILE:HD12	18:R:82:HIS:CE1	2.46	0.50
15:O:50:ALA:O	15:O:81:ARG:NH1	2.45	0.50
23:X:5:GLN:O	23:X:70:LEU:HD11	2.11	0.50
4:A:1155:A:O3'	17:Q:54:ARG:NH2	2.44	0.50
12:K:99:ILE:HG21	12:K:115:ILE:HD11	1.92	0.50
4:A:38:A:N3	7:E:43:THR:OG1	2.44	0.50
4:A:641:U:O4	4:A:648:G:N1	2.44	0.50
4:A:1647:U:O2'	4:A:1648:U:OP1	2.16	0.50
4:A:2134:A:N7	4:A:2157:G:O2'	2.44	0.50
15:O:2:ASP:OD1	15:O:3:LYS:N	2.44	0.50
18:R:21:ARG:O	18:R:22:LEU:HD12	2.11	0.50
4:A:513:A:C2'	4:A:514:A:O5'	2.59	0.50
4:A:554:U:H2'	4:A:555:G:O4'	2.11	0.50
4:A:2678:C:N4	4:A:2679:A:H62	2.09	0.50
4:A:106:C:O2	4:A:294:A:O2'	2.26	0.50
4:A:1687:G:H2'	4:A:1701:A:N6	2.26	0.50
16:P:91:VAL:HG11	16:P:96:LEU:HD21	1.94	0.50
4:A:138:U:O4	19:T:3:ARG:NH1	2.45	0.50
4:A:2306:C:N4	8:F:38:GLY:O	2.43	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
12:K:42:THR:HG22	12:K:57:VAL:HG22	1.92	0.50
4:A:307:G:N1	4:A:309:A:O5'	2.45	0.50
4:A:1141:U:H4'	4:A:1142:A:O4'	2.12	0.50
4:A:1703:G:H2'	4:A:1704:C:O4'	2.12	0.50
10:H:7:ASP:OD1	10:H:8:LYS:N	2.40	0.50
10:H:30:LEU:HD13	10:H:36:ALA:HB3	1.94	0.50
4:A:463:G:N2	4:A:466:A:OP2	2.37	0.50
4:A:542:C:H2'	4:A:543:G:C8	2.46	0.50
4:A:687:C:H42	4:A:787:C:H4'	1.77	0.50
9:G:123:GLU:O	9:G:130:ILE:HD12	2.12	0.50
4:A:1084:A:O2'	4:A:1105:U:O3'	2.25	0.49
4:A:161:A:H3'	4:A:162:U:H5''	1.93	0.49
4:A:311:A:N6	4:A:329:G:OP1	2.46	0.49
21:V:42:LEU:N	21:V:42:LEU:HD23	2.28	0.49
14:N:69:ARG:O	14:N:70:THR:OG1	2.22	0.49
14:N:79:LEU:HD23	14:N:83:LEU:HD12	1.94	0.49
17:Q:13:HIS:O	17:Q:17:LEU:HD23	2.13	0.49
4:A:2443:C:N4	4:A:2444:G:O6	2.45	0.49
21:V:6:ALA:HB1	21:V:40:ILE:HG23	1.93	0.49
4:A:2751:G:O4'	9:G:2:ARG:NH1	2.46	0.49
13:L:85:VAL:HG12	13:L:86:GLU:OE1	2.13	0.49
4:A:308:G:N2	4:A:477:A:N7	2.60	0.49
4:A:532:A:N1	4:A:2035:G:N2	2.61	0.49
4:A:724:U:H4'	4:A:1566:A:C5'	2.37	0.49
11:J:100:VAL:HG13	11:J:101:ILE:CD1	2.42	0.49
19:T:37:ASP:O	19:T:81:LYS:NZ	2.43	0.49
5:B:42:C:H5	8:F:65:LEU:HD13	1.76	0.49
8:F:33:ILE:O	8:F:90:LEU:HD23	2.13	0.49
14:N:28:LEU:HD13	14:N:34:ILE:HG22	1.94	0.49
14:N:90:ARG:NE	14:N:116:VAL:HG21	2.28	0.49
15:O:34:HIS:CE1	15:O:65:THR:HG21	2.47	0.49
17:Q:85:ALA:O	17:Q:86:SER:OG	2.24	0.49
1:C:125:LEU:HD22	1:C:152:ILE:HD11	1.93	0.49
4:A:202:U:H4'	4:A:203:A:OP1	2.13	0.49
4:A:966:G:H4'	4:A:2271:G:H22	1.77	0.49
4:A:1346:G:C2	4:A:1601:G:C6	3.01	0.49
4:A:1573:G:C5	4:A:1574:C:C5	3.00	0.49
4:A:242:G:H1'	4:A:243:U:OP2	2.13	0.48
4:A:324:A:N6	4:A:339:U:O4'	2.45	0.48
4:A:575:A:O4'	4:A:2499:C:O2'	2.30	0.48
4:A:1346:G:N1	4:A:1601:G:O6	2.46	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
15:O:53:THR:HB	15:O:65:THR:HG22	1.95	0.48
3:4:1:MET:SD	3:4:36:ARG:NH1	2.86	0.48
4:A:573:U:O4	4:A:2029:G:O2'	2.27	0.48
4:A:858:G:OP1	22:W:74:LYS:NZ	2.45	0.48
4:A:1033:U:C4	4:A:2750:A:N1	2.81	0.48
4:A:1291:C:N4	4:A:1292:G:O6	2.46	0.48
4:A:1416:G:HO2'	4:A:1417:C:P	2.35	0.48
4:A:1601:G:H2'	4:A:1602:U:O4'	2.13	0.48
4:A:2748:A:N7	4:A:2754:U:O4	2.46	0.48
4:A:1618:A:H2'	4:A:1650:A:OP2	2.14	0.48
6:D:21:SER:C	6:D:22:ILE:HD12	2.33	0.48
13:L:91:ASP:OD1	13:L:92:LEU:N	2.40	0.48
14:N:57:THR:HG23	14:N:62:ASN:ND2	2.28	0.48
1:C:162:ASN:O	1:C:162:ASN:ND2	2.47	0.48
4:A:644:A:O2'	4:A:645:C:O4'	2.30	0.48
6:D:28:GLU:HA	6:D:186:LEU:HD13	1.96	0.48
4:A:1613:G:H21	4:A:1649:G:H21	1.61	0.48
21:V:79:ARG:HG3	21:V:86:LEU:HD23	1.96	0.48
4:A:2643:G:H2'	4:A:2644:G:C8	2.48	0.48
6:D:105:LYS:HA	6:D:177:VAL:HG12	1.95	0.48
6:D:108:ASP:OD2	6:D:173:GLN:NE2	2.47	0.48
4:A:242:G:H4'	4:A:243:U:O5'	2.14	0.48
4:A:2576:G:OP1	4:A:2576:G:N2	2.46	0.48
4:A:2707:U:O2	14:N:71:ARG:NH1	2.45	0.48
4:A:161:A:O2'	4:A:2217:G:N2	2.47	0.48
4:A:729:G:C8	4:A:730:A:C8	3.02	0.48
4:A:1299:G:H22	4:A:1640:A:H5'	1.79	0.48
4:A:2202:U:O2	4:A:2221:G:O6	2.32	0.48
21:V:26:PHE:HZ	21:V:47:VAL:HG11	1.76	0.48
4:A:90:U:OP2	4:A:91:A:O2'	2.23	0.48
4:A:808:G:O6	13:L:41:ARG:NH1	2.47	0.48
4:A:1043:C:O2	4:A:1048:A:O2'	2.32	0.48
4:A:1267:U:H3	4:A:2013:A:H62	1.60	0.48
6:D:5:VAL:HG22	6:D:202:ILE:HD12	1.96	0.48
6:D:34:VAL:HG22	6:D:50:VAL:HG12	1.95	0.48
4:A:480:A:O2'	20:U:42:LYS:O	2.32	0.47
7:E:46:GLN:N	7:E:46:GLN:OE1	2.46	0.47
7:E:147:LEU:HD12	7:E:168:ASP:O	2.14	0.47
24:Y:16:THR:O	24:Y:20:ASN:ND2	2.41	0.47
4:A:1138:G:H21	11:J:108:MET:HE1	1.79	0.47
4:A:1183:U:OP1	25:Z:29:ARG:NH2	2.47	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:A:2314:A:N3	8:F:126:ASN:ND2	2.61	0.47
4:A:2676:C:O2	4:A:2732:G:C2	2.65	0.47
4:A:728:G:C4	4:A:729:G:N7	2.82	0.47
4:A:1153:C:OP1	17:Q:91:ARG:NH1	2.41	0.47
8:F:3:LEU:HD13	8:F:99:PHE:CD2	2.49	0.47
13:L:81:ASP:OD1	13:L:81:ASP:N	2.47	0.47
4:A:994:C:OP1	17:Q:52:ARG:NH2	2.47	0.47
19:T:34:VAL:HG22	19:T:35:ALA:H	1.80	0.47
4:A:243:U:O2	4:A:255:A:N7	2.48	0.47
4:A:705:A:H2'	4:A:706:A:H5'	1.96	0.47
4:A:775:G:P	4:A:777:G:O2'	2.73	0.47
4:A:1490:A:H3'	4:A:1491:G:H5'	1.97	0.47
4:A:728:G:H2'	4:A:729:G:C5	2.49	0.47
4:A:828:U:O2'	4:A:829:A:O4'	2.32	0.47
4:A:1380:G:H2'	4:A:1381:G:C8	2.49	0.47
4:A:197:A:N6	4:A:2431:U:O4'	2.41	0.47
4:A:219:A:N3	4:A:234:U:O2'	2.48	0.47
4:A:903:C:N4	4:A:904:G:O6	2.48	0.47
4:A:2129:C:C2	4:A:2159:G:N2	2.82	0.47
4:A:2639:A:O3'	11:J:96:ARG:NH1	2.47	0.47
4:A:2702:G:C2	4:A:2703:C:C5	3.03	0.47
11:J:31:GLU:HG2	11:J:142:ILE:HD12	1.94	0.47
4:A:370:G:O2'	4:A:424:G:OP1	2.30	0.47
4:A:571:U:N3	4:A:575:A:N7	2.63	0.47
7:E:15:SER:HB3	7:E:18:THR:HG22	1.97	0.47
7:E:161:ALA:CB	7:E:169:VAL:HG23	2.45	0.47
8:F:140:ILE:N	8:F:140:ILE:HD12	2.29	0.47
8:F:148:VAL:HG12	8:F:148:VAL:O	2.15	0.47
19:T:18:GLU:OE1	19:T:18:GLU:N	2.41	0.47
20:U:73:ASN:O	20:U:74:ALA:HB3	2.14	0.47
4:A:417:C:H2'	4:A:418:C:C6	2.50	0.47
4:A:1346:G:N2	4:A:1347:A:H1'	2.30	0.47
4:A:2855:C:H2'	4:A:2856:A:C8	2.50	0.47
18:R:59:ILE:HD12	18:R:101:ILE:HG12	1.97	0.47
4:A:68:G:N2	4:A:74:A:O4'	2.48	0.46
4:A:1267:U:O4	4:A:2013:A:N7	2.48	0.46
5:B:7:G:H21	15:O:47:VAL:HG21	1.80	0.46
5:B:27:C:O3'	15:O:36:TYR:OH	2.33	0.46
8:F:48:LEU:HD12	8:F:49:LEU:N	2.30	0.46
15:O:79:ALA:HB1	15:O:115:LEU:HD23	1.97	0.46
4:A:1613:G:HO2'	4:A:2008:C:H42	1.59	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:A:1184:U:OP1	25:Z:29:ARG:NE	2.46	0.46
4:A:2229:U:O2	23:X:33:HIS:NE2	2.47	0.46
5:B:6:G:C6	5:B:115:A:C6	3.03	0.46
14:N:103:ARG:NE	14:N:110:MET:SD	2.85	0.46
17:Q:55:GLN:O	17:Q:59:LEU:HD23	2.16	0.46
4:A:1060:U:O2'	4:A:1071:G:OP1	2.33	0.46
4:A:1062:G:N1	4:A:1071:G:OP2	2.48	0.46
4:A:1123:C:N4	4:A:1124:G:O6	2.48	0.46
4:A:2655:G:HO2'	4:A:2656:U:P	2.39	0.46
4:A:2743:U:OP2	4:A:2755:C:N4	2.45	0.46
4:A:2881:U:O2'	14:N:95:THR:O	2.34	0.46
25:Z:4:ILE:HD11	25:Z:56:VAL:HG21	1.98	0.46
2:2:26:ASN:O	2:2:30:VAL:HG23	2.16	0.46
4:A:6:A:N3	11:J:135:GLN:NE2	2.64	0.46
4:A:866:A:N6	4:A:913:U:O4'	2.48	0.46
4:A:1171:G:O6	4:A:1178:C:N4	2.49	0.46
4:A:1736:U:O2'	4:A:1737:G:O4'	2.34	0.46
18:R:23:GLU:O	18:R:25:LEU:HD22	2.16	0.46
4:A:1012:U:O2	11:J:27:ARG:NH1	2.49	0.46
4:A:2302:U:O2'	8:F:122:ASP:O	2.27	0.46
12:K:112:PHE:HB3	12:K:115:ILE:HG22	1.97	0.46
4:A:775:G:OP2	4:A:777:G:H2'	2.15	0.46
6:D:17:GLU:OE1	6:D:17:GLU:N	2.42	0.46
9:G:51:PHE:HE2	9:G:71:LEU:HD22	1.81	0.46
16:P:67:GLU:N	16:P:67:GLU:OE1	2.49	0.46
4:A:1684:G:H1'	4:A:1685:C:C6	2.51	0.46
6:D:24:VAL:HG23	6:D:24:VAL:O	2.15	0.46
15:O:98:GLN:OE1	15:O:98:GLN:N	2.45	0.46
4:A:1084:A:N6	4:A:1085:A:N1	2.64	0.46
4:A:1350:C:H2'	4:A:1351:C:C6	2.51	0.46
4:A:1736:U:H2'	4:A:1737:G:C2	2.50	0.46
4:A:1274:A:H2'	4:A:1646:C:H42	1.80	0.46
4:A:1650:A:HO2'	4:A:1651:G:H8	1.64	0.46
8:F:37:MET:SD	8:F:86:CYS:N	2.89	0.46
4:A:238:C:H2'	4:A:239:C:O4'	2.16	0.45
4:A:685:A:H61	4:A:778:G:H1'	1.81	0.45
4:A:729:G:O2'	4:A:730:A:OP2	2.32	0.45
4:A:1517:G:O2'	4:A:1518:C:O5'	2.33	0.45
5:B:6:G:O6	5:B:115:A:N6	2.48	0.45
8:F:20:ASN:ND2	8:F:20:ASN:O	2.50	0.45
17:Q:88:GLU:N	17:Q:88:GLU:OE1	2.49	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:A:1361:G:O2'	4:A:2215:C:O2'	1.99	0.45
9:G:102:ILE:HD11	9:G:116:LEU:HG	1.97	0.45
19:T:4:GLU:OE1	19:T:4:GLU:N	2.42	0.45
4:A:471:A:OP1	7:E:79:ARG:NH1	2.45	0.45
4:A:964:C:O2'	4:A:2273:A:N3	2.39	0.45
4:A:1027:A:N6	4:A:1126:A:O4'	2.49	0.45
4:A:1398:C:C2	4:A:1399:C:C5	3.04	0.45
4:A:2123:G:N3	4:A:2176:A:C6	2.85	0.45
5:B:3:C:C2'	5:B:4:C:OP1	2.64	0.45
8:F:169:LEU:HD11	8:F:174:PHE:CD2	2.51	0.45
16:P:16:VAL:HG21	16:P:75:THR:CG2	2.46	0.45
18:R:74:ILE:N	18:R:74:ILE:HD12	2.31	0.45
4:A:194:G:N2	4:A:251:A:N3	2.64	0.45
4:A:540:C:N4	4:A:541:A:H62	2.14	0.45
4:A:2508:G:O6	4:A:2580:U:C2	2.69	0.45
5:B:83:G:O6	5:B:94:A:N6	2.48	0.45
4:A:1309:G:O6	4:A:1310:G:O6	2.34	0.45
4:A:2106:U:N3	4:A:2107:G:N7	2.65	0.45
10:H:5:LEU:HD21	10:H:9:VAL:HG23	1.98	0.45
15:O:67:ASN:OD1	15:O:67:ASN:N	2.49	0.45
4:A:710:U:H2'	4:A:711:G:H8	1.81	0.45
19:T:89:GLU:OE1	19:T:89:GLU:N	2.43	0.45
23:X:64:ASP:OD1	23:X:65:THR:N	2.49	0.45
1:C:133:ILE:HD11	1:C:152:ILE:HD12	1.98	0.45
4:A:1301:A:O2'	4:A:1303:G:N7	2.38	0.45
4:A:2657:A:H62	4:A:2664:G:H21	1.64	0.45
4:A:2688:G:N1	4:A:2720:U:OP2	2.45	0.45
4:A:500:G:O2'	4:A:505:A:N6	2.50	0.45
8:F:93:GLU:OE1	8:F:93:GLU:N	2.44	0.45
8:F:140:ILE:HD12	8:F:140:ILE:H	1.80	0.45
8:F:169:LEU:HD23	8:F:176:PHE:CZ	2.51	0.45
24:Y:6:LEU:HD13	24:Y:56:LEU:HD22	1.99	0.45
2:2:34:ARG:NH2	2:2:41:ARG:O	2.46	0.45
3:4:16:ILE:CD1	3:4:25:VAL:HG22	2.46	0.45
10:H:12:LEU:N	10:H:12:LEU:HD23	2.31	0.45
4:A:225:C:H2'	4:A:226:A:O4'	2.17	0.45
4:A:1700:A:H3'	4:A:1701:A:C8	2.51	0.45
4:A:2072:C:H2'	4:A:2073:C:C1'	2.47	0.45
4:A:2679:A:H2'	4:A:2680:U:C6	2.52	0.45
4:A:1339:G:N1	4:A:1340:U:O4	2.49	0.44
4:A:1708:C:N4	4:A:2696:U:OP1	2.42	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:A:2399:G:O6	4:A:2418:A:N6	2.50	0.44
4:A:636:G:C8	13:L:128:THR:HG21	2.52	0.44
4:A:1049:C:H2'	4:A:1050:A:O4'	2.17	0.44
4:A:1650:A:O2'	4:A:1651:G:O5'	2.35	0.44
9:G:102:ILE:N	9:G:102:ILE:HD12	2.33	0.44
1:C:93:ASP:OD1	1:C:94:VAL:N	2.51	0.44
4:A:1653:G:O2'	4:A:1654:A:N7	2.49	0.44
5:B:78:A:H62	5:B:98:G:H21	1.66	0.44
8:F:134:GLN:O	8:F:140:ILE:HD13	2.17	0.44
4:A:194:G:N2	4:A:251:A:C4	2.85	0.44
4:A:262:A:N3	4:A:430:A:O2'	2.38	0.44
4:A:557:C:H2'	4:A:558:U:O4'	2.17	0.44
22:W:33:ILE:HD12	22:W:33:ILE:N	2.32	0.44
1:C:125:LEU:HD23	1:C:132:ALA:HB3	1.99	0.44
4:A:369:U:O2'	4:A:370:G:N7	2.48	0.44
4:A:701:G:H2'	4:A:702:U:C6	2.53	0.44
4:A:1303:G:O6	4:A:1304:A:N6	2.50	0.44
4:A:2544:G:H2'	4:A:2545:G:C8	2.53	0.44
4:A:2657:A:O2'	9:G:159:LYS:NZ	2.51	0.44
5:B:9:G:OP1	15:O:25:ARG:NH1	2.50	0.44
16:P:3:ILE:O	16:P:7:LEU:HD23	2.17	0.44
4:A:203:A:OP2	4:A:204:A:O2'	2.36	0.44
4:A:299:A:O2'	4:A:300:A:O4'	2.23	0.44
7:E:149:ILE:HD11	7:E:172:ALA:HA	2.00	0.44
4:A:1218:G:OP2	17:Q:14:LYS:NZ	2.47	0.44
14:N:106:ASP:N	14:N:106:ASP:OD1	2.51	0.44
21:V:26:PHE:CE1	21:V:42:LEU:HD21	2.52	0.44
4:A:636:G:N7	13:L:128:THR:HG21	2.33	0.44
4:A:671:C:HO2'	7:E:85:PHE:HZ	1.64	0.44
4:A:955:U:N3	4:A:956:G:N7	2.66	0.44
4:A:1726:C:H2'	4:A:1727:C:C1'	2.48	0.44
10:H:1:MET:N	10:H:21:VAL:O	2.46	0.44
14:N:72:ASP:O	14:N:76:VAL:HG23	2.16	0.44
4:A:1638:C:OP1	4:A:2710:C:O2'	2.36	0.44
4:A:1707:G:H22	4:A:1751:U:H2'	1.83	0.44
5:B:73:A:N3	5:B:73:A:H2'	2.33	0.44
7:E:154:ASP:OD1	7:E:154:ASP:N	2.44	0.44
11:J:25:LEU:CD2	11:J:64:VAL:HG12	2.48	0.44
18:R:86:GLN:N	18:R:86:GLN:OE1	2.50	0.44
4:A:151:C:N4	4:A:152:A:N6	2.66	0.43
4:A:1129:A:O2'	4:A:2570:G:N2	2.51	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
8:F:35:LEU:HD12	8:F:35:LEU:N	2.33	0.43
4:A:2898:U:O2'	11:J:136:GLN:NE2	2.45	0.43
8:F:76:PHE:O	8:F:78:ILE:HG23	2.18	0.43
16:P:3:ILE:N	16:P:3:ILE:HD12	2.33	0.43
19:T:39:THR:HG23	19:T:42:GLU:H	1.83	0.43
23:X:42:GLU:OE1	23:X:42:GLU:N	2.51	0.43
4:A:220:G:O2'	4:A:233:A:O2'	2.21	0.43
4:A:818:G:N1	4:A:1188:U:OP2	2.44	0.43
4:A:877:A:O2'	4:A:900:A:N6	2.51	0.43
4:A:2436:G:H2'	4:A:2437:G:C8	2.53	0.43
4:A:2688:G:N2	4:A:2720:U:OP2	2.51	0.43
7:E:148:ILE:HB	7:E:169:VAL:HG22	2.00	0.43
9:G:126:THR:OG1	9:G:127:GLN:N	2.49	0.43
4:A:1720:U:H2'	4:A:1721:G:O4'	2.18	0.43
4:A:1726:C:H2'	4:A:1727:C:C6	2.54	0.43
6:D:68:PHE:CZ	6:D:79:LEU:HD21	2.53	0.43
2:2:43:THR:OG1	4:A:126:A:N6	2.52	0.43
4:A:258:G:H2'	4:A:259:G:C8	2.53	0.43
4:A:1451:C:H4'	4:A:1452:G:O4'	2.19	0.43
4:A:1496:A:H3'	4:A:1498:C:H41	1.82	0.43
4:A:1736:U:O2'	4:A:1737:G:N3	2.51	0.43
21:V:61:LEU:HD12	21:V:61:LEU:H	1.84	0.43
4:A:1574:C:C2	4:A:1575:C:C5	3.06	0.43
11:J:44:TYR:O	17:Q:63:ARG:NE	2.50	0.43
25:Z:22:THR:HG23	25:Z:46:MET:HE2	2.00	0.43
4:A:710:U:H2'	4:A:711:G:C8	2.54	0.43
4:A:967:U:H2'	4:A:968:C:C6	2.54	0.43
4:A:2486:C:O2	4:A:2487:G:C8	2.72	0.43
5:B:8:C:O2'	15:O:40:ILE:HG21	2.19	0.43
5:B:29:A:H2'	5:B:30:C:C6	2.54	0.43
8:F:102:LEU:HD12	8:F:106:ALA:CB	2.48	0.43
9:G:143:VAL:O	9:G:147:LEU:HD23	2.19	0.43
4:A:9:G:O2'	4:A:2800:A:N6	2.52	0.43
4:A:701:G:O6	4:A:730:A:N6	2.51	0.43
4:A:1083:U:N3	4:A:1086:A:OP2	2.52	0.43
4:A:28:A:H2'	4:A:29:U:O4'	2.19	0.43
4:A:238:C:H2'	4:A:239:C:C1'	2.49	0.43
4:A:474:G:H3'	4:A:475:C:H5'	2.01	0.43
4:A:545:U:C4	4:A:548:G:O6	2.72	0.43
4:A:1577:C:H2'	4:A:1578:U:C1'	2.49	0.43
12:K:87:LEU:HD22	12:K:92:GLU:HA	2.00	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:A:144:A:H4'	19:T:2:ILE:HD11	2.01	0.42
4:A:2385:C:H2'	4:A:2386:A:C8	2.53	0.42
6:D:98:VAL:HG22	6:D:98:VAL:O	2.18	0.42
8:F:129:MET:SD	8:F:129:MET:N	2.92	0.42
9:G:87:GLN:OE1	9:G:87:GLN:N	2.52	0.42
4:A:689:A:H3'	4:A:690:G:C5'	2.37	0.42
4:A:2875:C:H2'	4:A:2876:G:C8	2.54	0.42
4:A:691:C:O5'	4:A:699:A:H5''	2.19	0.42
4:A:1617:C:O2	4:A:1648:U:O2'	2.37	0.42
4:A:2082:A:N7	4:A:2239:G:N1	2.67	0.42
6:D:85:ALA:N	6:D:88:GLU:OE2	2.51	0.42
9:G:154:GLU:O	9:G:158:GLY:N	2.50	0.42
20:U:4:ILE:HD12	20:U:27:VAL:HG11	2.00	0.42
4:A:1311:G:H21	4:A:1603:A:H62	1.68	0.42
4:A:1347:A:C5	4:A:1348:C:C6	3.07	0.42
14:N:34:ILE:HG23	14:N:113:ILE:HG23	2.01	0.42
3:4:5:ALA:C	4:A:1124:G:H21	2.22	0.42
4:A:1664:A:H2'	4:A:1664:A:N3	2.33	0.42
6:D:22:ILE:HD12	6:D:22:ILE:N	2.34	0.42
9:G:88:LEU:N	9:G:88:LEU:HD12	2.35	0.42
4:A:248:G:C5	4:A:250:G:N2	2.88	0.42
4:A:1551:A:H2'	4:A:1552:A:O4'	2.19	0.42
4:A:1557:C:OP2	4:A:1558:C:O2'	2.24	0.42
4:A:2318:G:H4'	4:A:2319:G:OP1	2.20	0.42
4:A:2520:C:H2'	4:A:2521:C:O4'	2.19	0.42
4:A:2703:C:H2'	4:A:2704:C:C6	2.54	0.42
9:G:132:LEU:H	9:G:132:LEU:HD23	1.85	0.42
14:N:57:THR:HG23	14:N:62:ASN:HD22	1.84	0.42
22:W:55:LEU:N	22:W:55:LEU:HD12	2.34	0.42
4:A:987:C:O2'	4:A:1000:A:N3	2.40	0.42
4:A:1513:U:HO2'	4:A:1514:G:C5'	2.22	0.42
4:A:2375:G:H21	4:A:2377:A:H8	1.68	0.42
19:T:10:VAL:O	19:T:35:ALA:N	2.52	0.42
4:A:1136:G:HO2'	4:A:2038:G:HO2'	1.68	0.42
4:A:2695:U:O2	4:A:2714:G:O6	2.38	0.42
5:B:42:C:C5	8:F:65:LEU:HD13	2.55	0.42
24:Y:43:LEU:HA	24:Y:46:VAL:HG22	2.02	0.42
4:A:527:C:N4	4:A:2777:G:O2'	2.49	0.42
4:A:956:G:O2'	4:A:959:A:N6	2.52	0.42
4:A:1264:A:OP2	4:A:1265:A:O2'	2.26	0.42
4:A:1629:U:O4	4:A:1630:A:N6	2.53	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:A:1715:G:N2	4:A:1744:A:OP2	2.42	0.42
4:A:2080:A:C6	4:A:2241:A:N6	2.88	0.42
4:A:2862:G:H2'	4:A:2863:C:O4'	2.20	0.42
6:D:188:LEU:HD12	6:D:188:LEU:N	2.35	0.42
4:A:659:G:N3	7:E:30:GLN:NE2	2.67	0.42
4:A:705:A:N6	4:A:727:A:C4	2.88	0.42
4:A:1352:U:C2	4:A:1378:A:N6	2.88	0.42
4:A:2255:G:C6	4:A:2256:G:C5	3.07	0.42
4:A:2525:G:HO2'	4:A:2741:A:H2	1.67	0.42
5:B:3:C:H3'	5:B:4:C:H5''	2.01	0.42
5:B:8:C:OP1	15:O:15:ARG:NH1	2.44	0.42
6:D:27:ILE:HD12	6:D:201:LEU:HB2	2.01	0.42
4:A:415:A:N6	4:A:2409:G:O6	2.53	0.41
4:A:1163:G:C2	4:A:1164:C:C5	3.07	0.41
7:E:149:ILE:HD13	7:E:188:MET:HE2	2.01	0.41
4:A:239:C:O2'	4:A:622:G:O2'	2.38	0.41
4:A:251:A:OP1	13:L:48:ARG:NH2	2.49	0.41
4:A:451:U:O2	4:A:453:A:N6	2.53	0.41
4:A:940:G:H2'	4:A:941:A:O4'	2.20	0.41
4:A:1170:C:N4	4:A:1171:G:O6	2.53	0.41
4:A:1415:U:O2'	4:A:1416:G:H4'	2.20	0.41
9:G:77:GLY:O	9:G:81:GLY:N	2.53	0.41
21:V:6:ALA:HB1	21:V:40:ILE:CG2	2.49	0.41
4:A:371:A:O3'	4:A:372:G:H4'	2.20	0.41
4:A:434:U:O2	4:A:435:C:N4	2.46	0.41
4:A:955:U:O4	4:A:956:G:O6	2.38	0.41
4:A:1210:G:O6	4:A:1237:A:O2'	2.36	0.41
4:A:1309:G:C6	4:A:1310:G:O6	2.74	0.41
4:A:1399:C:C2	4:A:1400:U:C5	3.08	0.41
4:A:1473:G:N1	4:A:1519:G:C6	2.89	0.41
4:A:2033:A:HO2'	4:A:2035:G:P	2.43	0.41
4:A:2050:C:H2'	4:A:2051:A:O4'	2.20	0.41
4:A:2487:G:C2	4:A:2488:G:C5	3.09	0.41
4:A:2517:C:HO2'	4:A:2519:U:H6	1.67	0.41
6:D:5:VAL:HG22	6:D:202:ILE:CD1	2.50	0.41
12:K:20:MET:SD	12:K:21:CYS:N	2.92	0.41
22:W:63:VAL:HA	22:W:78:ILE:HD13	2.03	0.41
4:A:703:U:C5	4:A:704:G:C5	3.09	0.41
4:A:1111:A:H2'	4:A:1112:G:O4'	2.20	0.41
4:A:1348:C:C2	4:A:1349:C:C6	3.09	0.41
4:A:1497:U:OP2	4:A:1498:C:N4	2.48	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:A:2312:U:OP1	8:F:70:ARG:N	2.43	0.41
8:F:105:ILE:O	8:F:109:ARG:NH1	2.47	0.41
13:L:92:LEU:O	13:L:92:LEU:HD23	2.20	0.41
3:4:16:ILE:HD12	3:4:25:VAL:HG22	2.02	0.41
4:A:2531:A:C2	4:A:2532:G:N7	2.88	0.41
4:A:2655:G:N2	4:A:2665:A:OP2	2.54	0.41
13:L:116:VAL:O	13:L:116:VAL:HG13	2.19	0.41
4:A:569:U:H1'	4:A:971:G:N2	2.35	0.41
4:A:705:A:H2'	4:A:706:A:C5'	2.51	0.41
4:A:793:A:H2'	4:A:793:A:N3	2.36	0.41
4:A:1301:A:H2'	4:A:1301:A:N3	2.35	0.41
4:A:1665:A:C2	4:A:1666:G:N7	2.89	0.41
4:A:2756:U:H4'	4:A:2757:A:OP1	2.19	0.41
4:A:2871:U:O2'	4:A:2872:A:N7	2.50	0.41
7:E:105:LEU:HD23	7:E:200:LEU:HD21	2.02	0.41
16:P:47:ILE:HD11	16:P:59:THR:HG21	2.02	0.41
4:A:567:U:H4'	13:L:36:LYS:HZ1	1.86	0.41
4:A:1271:G:N2	4:A:1325:U:OP2	2.53	0.41
4:A:1649:G:N2	4:A:2008:C:N3	2.68	0.41
4:A:2300:C:C2	4:A:2317:A:N6	2.89	0.41
8:F:37:MET:SD	8:F:37:MET:O	2.79	0.41
22:W:63:VAL:HG22	22:W:78:ILE:CD1	2.51	0.41
2:2:30:VAL:HG22	2:2:33:ARG:NH2	2.35	0.41
4:A:475:C:N3	4:A:479:A:N7	2.68	0.41
4:A:1413:A:C6	4:A:1590:A:N6	2.89	0.41
4:A:2043:C:C2	4:A:2044:C:C5	3.08	0.41
4:A:2144:G:O2'	4:A:2146:C:O4'	2.24	0.41
4:A:2627:G:N2	4:A:2777:G:N3	2.68	0.41
8:F:107:VAL:N	8:F:108:PRO:CD	2.84	0.41
13:L:5:THR:HG22	13:L:5:THR:O	2.20	0.41
19:T:37:ASP:OD1	19:T:37:ASP:N	2.53	0.41
2:2:25:LYS:NZ	2:2:29:GLN:OE1	2.19	0.41
3:4:38:GLY:O	4:A:1031:G:N2	2.53	0.41
4:A:499:U:O4	4:A:503:A:N7	2.54	0.41
4:A:499:U:H2'	4:A:500:G:O4'	2.21	0.41
4:A:513:A:O2'	4:A:514:A:O5'	2.39	0.41
4:A:689:A:C3'	4:A:690:G:H5''	2.35	0.41
4:A:1419:A:O2'	4:A:1420:A:H5'	2.20	0.41
4:A:2011:U:H2'	4:A:2012:G:O3'	2.21	0.41
4:A:2279:G:OP2	22:W:7:ARG:NH2	2.54	0.41
4:A:2531:A:H2'	4:A:2531:A:N3	2.36	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:B:39:A:H2'	5:B:40:U:C6	2.56	0.41
11:J:98:GLU:OE1	11:J:98:GLU:N	2.48	0.41
14:N:45:ARG:HG2	14:N:113:ILE:HD11	2.03	0.41
14:N:103:ARG:NH2	14:N:110:MET:SD	2.91	0.41
15:O:40:ILE:CD1	15:O:47:VAL:HG22	2.51	0.41
20:U:27:VAL:HG12	20:U:33:VAL:HG12	2.02	0.41
4:A:603:A:N6	4:A:655:A:O4'	2.54	0.41
5:B:14:U:O4'	5:B:106:G:N2	2.52	0.41
8:F:169:LEU:HD11	8:F:174:PHE:CE2	2.56	0.41
13:L:93:ASN:O	13:L:94:THR:OG1	2.33	0.41
4:A:417:C:H2'	4:A:418:C:O4'	2.21	0.40
4:A:788:A:N6	4:A:795:C:O4'	2.48	0.40
4:A:1453:A:N6	14:N:73:ASN:OD1	2.54	0.40
4:A:2282:G:N2	4:A:2390:U:O2	2.41	0.40
5:B:13:G:N2	5:B:16:G:N3	2.65	0.40
8:F:135:ILE:HD12	8:F:142:TYR:CD2	2.56	0.40
19:T:6:ARG:NH2	19:T:37:ASP:OD2	2.55	0.40
4:A:202:U:O3'	4:A:203:A:O4'	2.39	0.40
4:A:246:C:H2'	4:A:247:G:O4'	2.20	0.40
4:A:543:G:O6	4:A:551:G:C6	2.74	0.40
4:A:775:G:P	4:A:778:G:O4'	2.71	0.40
4:A:1436:G:H3'	4:A:1437:C:H5''	2.03	0.40
4:A:2702:G:N3	4:A:2702:G:H2'	2.36	0.40
11:J:86:GLN:OE1	11:J:86:GLN:N	2.50	0.40
17:Q:68:ALA:HB1	17:Q:73:ILE:HG23	2.03	0.40
4:A:699:A:N3	4:A:699:A:H2'	2.36	0.40
4:A:719:C:H2'	4:A:720:U:O4'	2.20	0.40
4:A:1164:C:C2	4:A:1165:A:C8	3.09	0.40
4:A:1627:G:C2	4:A:1640:A:C8	3.10	0.40
4:A:2279:G:N7	22:W:10:ARG:NH2	2.69	0.40
4:A:2375:G:N1	4:A:2379:G:O6	2.55	0.40
4:A:2813:A:C2	4:A:2814:A:C8	3.10	0.40
8:F:43:ILE:HD12	8:F:43:ILE:N	2.35	0.40
4:A:458:G:O2'	4:A:459:U:P	2.80	0.40
4:A:501:A:H2'	4:A:502:A:O4'	2.22	0.40
4:A:825:A:C6	4:A:833:A:N6	2.89	0.40
4:A:856:G:H3'	4:A:857:G:C8	2.57	0.40
4:A:1412:U:O4	4:A:1413:A:N6	2.55	0.40
6:D:12:THR:OG1	6:D:13:ARG:N	2.54	0.40
8:F:109:ARG:NH2	8:F:136:ILE:O	2.53	0.40
24:Y:13:GLU:HG3	24:Y:57:LEU:HD21	2.03	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:4:5:ALA:O	4:A:1124:G:N2	2.54	0.40
4:A:545:U:O4	4:A:548:G:O6	2.40	0.40
4:A:1248:G:OP1	7:E:44:ARG:NH1	2.55	0.40
4:A:2254:C:C2	4:A:2255:G:C8	3.10	0.40
4:A:2499:C:H2'	4:A:2500:U:C6	2.56	0.40

There are no symmetry-related clashes.

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	C	156/183 (85%)	152 (97%)	4 (3%)	0	100	100
2	2	36/46 (78%)	36 (100%)	0	0	100	100
3	4	36/38 (95%)	35 (97%)	1 (3%)	0	100	100
6	D	169/209 (81%)	165 (98%)	4 (2%)	0	100	100
7	E	172/201 (86%)	167 (97%)	4 (2%)	1 (1%)	22	59
8	F	175/177 (99%)	168 (96%)	7 (4%)	0	100	100
9	G	174/176 (99%)	169 (97%)	5 (3%)	0	100	100
10	H	49/149 (33%)	46 (94%)	3 (6%)	0	100	100
11	J	140/142 (99%)	138 (99%)	2 (1%)	0	100	100
12	K	120/122 (98%)	116 (97%)	4 (3%)	0	100	100
13	L	141/143 (99%)	129 (92%)	12 (8%)	0	100	100
14	N	118/120 (98%)	112 (95%)	6 (5%)	0	100	100
15	O	114/116 (98%)	109 (96%)	5 (4%)	0	100	100
16	P	112/114 (98%)	110 (98%)	2 (2%)	0	100	100
17	Q	115/117 (98%)	113 (98%)	2 (2%)	0	100	100
18	R	101/103 (98%)	95 (94%)	5 (5%)	1 (1%)	13	48

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
19	T	91/93 (98%)	85 (93%)	6 (7%)	0	100	100
20	U	100/102 (98%)	92 (92%)	8 (8%)	0	100	100
21	V	92/94 (98%)	88 (96%)	4 (4%)	0	100	100
22	W	73/75 (97%)	72 (99%)	1 (1%)	0	100	100
23	X	75/77 (97%)	75 (100%)	0	0	100	100
24	Y	61/63 (97%)	58 (95%)	3 (5%)	0	100	100
25	Z	56/58 (97%)	55 (98%)	1 (2%)	0	100	100
All	All	2476/2718 (91%)	2385 (96%)	89 (4%)	2 (0%)	50	82

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
18	R	54	VAL
7	E	83	VAL

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	C	137/161 (85%)	136 (99%)	1 (1%)	81	86
2	2	30/38 (79%)	30 (100%)	0	100	100
3	4	34/34 (100%)	33 (97%)	1 (3%)	37	58
6	D	134/164 (82%)	133 (99%)	1 (1%)	81	86
7	E	146/165 (88%)	144 (99%)	2 (1%)	62	75
8	F	148/148 (100%)	143 (97%)	5 (3%)	32	54
9	G	137/137 (100%)	137 (100%)	0	100	100
10	H	41/114 (36%)	41 (100%)	0	100	100
11	J	116/116 (100%)	115 (99%)	1 (1%)	75	83
12	K	103/103 (100%)	102 (99%)	1 (1%)	73	81
13	L	102/102 (100%)	99 (97%)	3 (3%)	37	58

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
14	N	100/100 (100%)	100 (100%)	0	100	100
15	O	86/86 (100%)	86 (100%)	0	100	100
16	P	99/99 (100%)	98 (99%)	1 (1%)	73	81
17	Q	89/89 (100%)	89 (100%)	0	100	100
18	R	84/84 (100%)	83 (99%)	1 (1%)	67	79
19	T	80/80 (100%)	80 (100%)	0	100	100
20	U	83/83 (100%)	82 (99%)	1 (1%)	67	79
21	V	78/78 (100%)	77 (99%)	1 (1%)	65	77
22	W	57/57 (100%)	57 (100%)	0	100	100
23	X	67/67 (100%)	67 (100%)	0	100	100
24	Y	55/55 (100%)	54 (98%)	1 (2%)	54	71
25	Z	48/48 (100%)	47 (98%)	1 (2%)	48	66
All	All	2054/2208 (93%)	2033 (99%)	21 (1%)	71	81

All (21) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	C	75	MET
3	4	12	ARG
6	D	33	ARG
7	E	162	ARG
7	E	176	ASP
8	F	29	ARG
8	F	50	ASP
8	F	79	ARG
8	F	86	CYS
8	F	142	TYR
11	J	25	LEU
12	K	45	GLU
13	L	6	LEU
13	L	48	ARG
13	L	81	ASP
16	P	113	LEU
18	R	25	LEU
20	U	98	ASN
21	V	79	ARG
24	Y	30	MET
25	Z	2	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (5) such sidechains are listed below:

Mol	Chain	Res	Type
7	E	30	GLN
7	E	163	ASN
11	J	138	GLN
15	O	38	GLN
22	W	72	ASN

5.3.3 RNA [i](#)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
4	A	2568/2903 (88%)	540 (21%)	17 (0%)
5	B	119/120 (99%)	17 (14%)	2 (1%)
All	All	2687/3023 (88%)	557 (20%)	19 (0%)

All (557) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
4	A	10	A
4	A	26	G
4	A	27	G
4	A	28	A
4	A	34	U
4	A	35	G
4	A	45	G
4	A	46	G
4	A	50	U
4	A	51	G
4	A	63	A
4	A	72	U
4	A	74	A
4	A	75	G
4	A	118	A
4	A	120	U
4	A	139	U
4	A	140	C
4	A	141	G
4	A	162	U
4	A	163	C
4	A	175	G
4	A	188	G
4	A	190	A

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Mol	Chain	Res	Type
4	A	196	A
4	A	199	A
4	A	203	A
4	A	205	G
4	A	215	G
4	A	216	A
4	A	221	A
4	A	222	A
4	A	224	U
4	A	228	C
4	A	230	G
4	A	239	C
4	A	243	U
4	A	248	G
4	A	250	G
4	A	254	G
4	A	255	A
4	A	264	C
4	A	265	A
4	A	266	G
4	A	271	G
4	A	272	A
4	A	276	U
4	A	277	G
4	A	278	A
4	A	285	G
4	A	307	G
4	A	322	A
4	A	323	C
4	A	324	A
4	A	329	G
4	A	330	A
4	A	331	C
4	A	345	A
4	A	356	G
4	A	371	A
4	A	372	G
4	A	373	U
4	A	379	G
4	A	386	G
4	A	387	U
4	A	401	A

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Mol	Chain	Res	Type
4	A	404	A
4	A	406	G
4	A	411	G
4	A	412	A
4	A	430	A
4	A	435	C
4	A	451	U
4	A	456	C
4	A	457	A
4	A	458	G
4	A	459	U
4	A	473	G
4	A	480	A
4	A	481	G
4	A	490	C
4	A	491	G
4	A	505	A
4	A	509	C
4	A	510	C
4	A	514	A
4	A	530	G
4	A	531	C
4	A	532	A
4	A	543	G
4	A	545	U
4	A	546	U
4	A	547	A
4	A	563	A
4	A	571	U
4	A	572	A
4	A	573	U
4	A	574	A
4	A	575	A
4	A	603	A
4	A	607	U
4	A	614	A
4	A	621	A
4	A	627	A
4	A	628	G
4	A	637	A
4	A	645	C
4	A	646	U

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Mol	Chain	Res	Type
4	A	647	G
4	A	654	A
4	A	659	G
4	A	675	A
4	A	683	U
4	A	684	G
4	A	686	U
4	A	687	C
4	A	690	G
4	A	722	A
4	A	727	A
4	A	729	G
4	A	730	A
4	A	733	G
4	A	776	G
4	A	777	G
4	A	784	G
4	A	785	G
4	A	788	A
4	A	789	A
4	A	792	A
4	A	793	A
4	A	801	G
4	A	805	G
4	A	811	U
4	A	812	C
4	A	819	A
4	A	827	U
4	A	828	U
4	A	830	G
4	A	845	A
4	A	846	U
4	A	847	U
4	A	855	G
4	A	857	G
4	A	875	G
4	A	876	C
4	A	877	A
4	A	878	A
4	A	896	A
4	A	897	C
4	A	907	G

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Mol	Chain	Res	Type
4	A	910	A
4	A	914	G
4	A	931	U
4	A	932	U
4	A	941	A
4	A	959	A
4	A	961	C
4	A	973	A
4	A	974	G
4	A	975	A
4	A	980	A
4	A	983	A
4	A	995	C
4	A	996	A
4	A	1009	A
4	A	1011	G
4	A	1012	U
4	A	1013	C
4	A	1020	A
4	A	1021	A
4	A	1022	G
4	A	1023	U
4	A	1026	G
4	A	1028	A
4	A	1033	U
4	A	1034	G
4	A	1040	A
4	A	1045	C
4	A	1046	A
4	A	1047	G
4	A	1057	A
4	A	1058	U
4	A	1059	G
4	A	1060	U
4	A	1061	U
4	A	1062	G
4	A	1065	U
4	A	1066	U
4	A	1067	A
4	A	1068	G
4	A	1070	A
4	A	1073	A

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Mol	Chain	Res	Type
4	A	1075	C
4	A	1076	C
4	A	1079	C
4	A	1082	U
4	A	1083	U
4	A	1084	A
4	A	1088	A
4	A	1090	A
4	A	1097	U
4	A	1104	C
4	A	1111	A
4	A	1119	U
4	A	1134	A
4	A	1135	C
4	A	1143	A
4	A	1151	A
4	A	1157	G
4	A	1171	G
4	A	1174	U
4	A	1175	A
4	A	1176	U
4	A	1180	U
4	A	1211	C
4	A	1212	G
4	A	1236	G
4	A	1253	A
4	A	1255	U
4	A	1256	G
4	A	1264	A
4	A	1267	U
4	A	1271	G
4	A	1272	A
4	A	1273	U
4	A	1274	A
4	A	1275	A
4	A	1283	G
4	A	1300	G
4	A	1301	A
4	A	1302	A
4	A	1303	G
4	A	1306	C
4	A	1314	C

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Mol	Chain	Res	Type
4	A	1325	U
4	A	1329	U
4	A	1341	G
4	A	1343	G
4	A	1345	C
4	A	1365	A
4	A	1376	C
4	A	1378	A
4	A	1379	U
4	A	1383	A
4	A	1393	A
4	A	1395	A
4	A	1403	A
4	A	1416	G
4	A	1420	A
4	A	1421	G
4	A	1427	A
4	A	1437	C
4	A	1451	C
4	A	1453	A
4	A	1454	C
4	A	1458	U
4	A	1461	C
4	A	1467	U
4	A	1475	G
4	A	1482	G
4	A	1490	A
4	A	1491	G
4	A	1496	A
4	A	1498	C
4	A	1504	A
4	A	1508	A
4	A	1512	C
4	A	1513	U
4	A	1514	G
4	A	1515	A
4	A	1518	C
4	A	1524	G
4	A	1533	C
4	A	1535	A
4	A	1536	C
4	A	1537	G

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Mol	Chain	Res	Type
4	A	1546	G
4	A	1547	C
4	A	1560	G
4	A	1565	C
4	A	1566	A
4	A	1569	A
4	A	1578	U
4	A	1584	U
4	A	1585	C
4	A	1598	A
4	A	1607	C
4	A	1616	A
4	A	1620	G
4	A	1622	G
4	A	1633	G
4	A	1634	A
4	A	1635	A
4	A	1640	A
4	A	1645	G
4	A	1646	C
4	A	1647	U
4	A	1648	U
4	A	1649	G
4	A	1650	A
4	A	1651	G
4	A	1653	G
4	A	1657	U
4	A	1663	G
4	A	1666	G
4	A	1667	G
4	A	1668	A
4	A	1669	A
4	A	1670	C
4	A	1685	C
4	A	1686	C
4	A	1687	G
4	A	1688	U
4	A	1701	A
4	A	1702	G
4	A	1703	G
4	A	1704	C
4	A	1705	A

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Mol	Chain	Res	Type
4	A	1706	C
4	A	1707	G
4	A	1708	C
4	A	1709	U
4	A	1711	A
4	A	1713	A
4	A	1716	U
4	A	1721	G
4	A	1729	U
4	A	1730	C
4	A	1731	G
4	A	1732	C
4	A	1733	G
4	A	1735	A
4	A	1738	G
4	A	1744	A
4	A	1746	A
4	A	1747	U
4	A	1748	C
4	A	1749	A
4	A	1993	U
4	A	1994	C
4	A	1995	U
4	A	1997	C
4	A	2008	C
4	A	2009	A
4	A	2010	G
4	A	2011	U
4	A	2012	G
4	A	2015	A
4	A	2021	C
4	A	2022	U
4	A	2030	A
4	A	2031	A
4	A	2032	G
4	A	2043	C
4	A	2052	A
4	A	2053	G
4	A	2055	C
4	A	2056	G
4	A	2059	A
4	A	2060	A

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Mol	Chain	Res	Type
4	A	2061	G
4	A	2062	A
4	A	2068	U
4	A	2069	G
4	A	2086	U
4	A	2090	A
4	A	2093	G
4	A	2096	C
4	A	2104	C
4	A	2108	A
4	A	2111	U
4	A	2112	G
4	A	2113	U
4	A	2115	G
4	A	2116	G
4	A	2118	U
4	A	2119	A
4	A	2125	G
4	A	2127	G
4	A	2131	U
4	A	2132	U
4	A	2133	G
4	A	2140	G
4	A	2143	C
4	A	2162	G
4	A	2164	C
4	A	2165	C
4	A	2168	G
4	A	2172	U
4	A	2173	A
4	A	2175	C
4	A	2176	A
4	A	2178	C
4	A	2182	U
4	A	2189	U
4	A	2198	A
4	A	2199	A
4	A	2204	G
4	A	2213	U
4	A	2225	A
4	A	2226	C
4	A	2237	G

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Mol	Chain	Res	Type
4	A	2238	G
4	A	2239	G
4	A	2250	G
4	A	2251	G
4	A	2265	U
4	A	2279	G
4	A	2283	C
4	A	2287	A
4	A	2297	A
4	A	2305	U
4	A	2308	G
4	A	2309	A
4	A	2319	G
4	A	2321	U
4	A	2325	G
4	A	2327	A
4	A	2333	A
4	A	2335	A
4	A	2336	A
4	A	2350	C
4	A	2357	G
4	A	2383	G
4	A	2385	C
4	A	2389	G
4	A	2391	G
4	A	2402	U
4	A	2406	A
4	A	2407	A
4	A	2409	G
4	A	2422	C
4	A	2424	C
4	A	2425	A
4	A	2428	G
4	A	2429	G
4	A	2430	A
4	A	2434	A
4	A	2435	A
4	A	2439	A
4	A	2441	U
4	A	2447	G
4	A	2448	A
4	A	2449	U

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Mol	Chain	Res	Type
4	A	2454	G
4	A	2457	U
4	A	2476	A
4	A	2478	A
4	A	2487	G
4	A	2490	G
4	A	2494	G
4	A	2497	A
4	A	2498	C
4	A	2499	C
4	A	2501	C
4	A	2502	G
4	A	2503	A
4	A	2504	U
4	A	2505	G
4	A	2506	U
4	A	2508	G
4	A	2513	A
4	A	2516	A
4	A	2517	C
4	A	2518	A
4	A	2520	C
4	A	2525	G
4	A	2529	G
4	A	2535	G
4	A	2545	G
4	A	2547	A
4	A	2554	U
4	A	2566	A
4	A	2567	G
4	A	2573	C
4	A	2577	A
4	A	2578	G
4	A	2581	G
4	A	2582	G
4	A	2585	U
4	A	2596	U
4	A	2597	G
4	A	2598	A
4	A	2599	G
4	A	2600	A
4	A	2602	A

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Mol	Chain	Res	Type
4	A	2603	G
4	A	2605	U
4	A	2606	C
4	A	2609	U
4	A	2610	C
4	A	2611	C
4	A	2612	C
4	A	2613	U
4	A	2614	A
4	A	2615	U
4	A	2630	G
4	A	2646	C
4	A	2647	U
4	A	2654	A
4	A	2655	G
4	A	2656	U
4	A	2665	A
4	A	2681	C
4	A	2682	A
4	A	2685	G
4	A	2689	U
4	A	2690	U
4	A	2714	G
4	A	2718	G
4	A	2726	A
4	A	2732	G
4	A	2733	A
4	A	2744	G
4	A	2748	A
4	A	2753	A
4	A	2757	A
4	A	2764	A
4	A	2765	A
4	A	2766	A
4	A	2778	A
4	A	2779	U
4	A	2780	G
4	A	2791	G
4	A	2800	A
4	A	2808	G
4	A	2809	A
4	A	2818	U

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Mol	Chain	Res	Type
4	A	2820	A
4	A	2833	U
4	A	2835	A
4	A	2848	G
4	A	2860	A
4	A	2867	G
4	A	2879	A
4	A	2880	C
4	A	2883	A
4	A	2884	U
4	A	2891	U
4	A	2894	G
5	B	4	C
5	B	12	C
5	B	13	G
5	B	24	G
5	B	35	C
5	B	39	A
5	B	41	G
5	B	42	C
5	B	44	G
5	B	53	A
5	B	58	A
5	B	66	A
5	B	67	G
5	B	88	C
5	B	89	U
5	B	108	A
5	B	109	A

All (19) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
4	A	202	U
4	A	227	A
4	A	242	G
4	A	271	G
4	A	429	A
4	A	458	G
4	A	644	A
4	A	729	G
4	A	732	C

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Mol	Chain	Res	Type
4	A	776	G
4	A	1020	A
4	A	1022	G
4	A	1730	C
4	A	2318	G
4	A	2599	G
4	A	2629	U
4	A	2655	G
5	B	52	A
5	B	66	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 oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

There are no ligands in this entry.

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

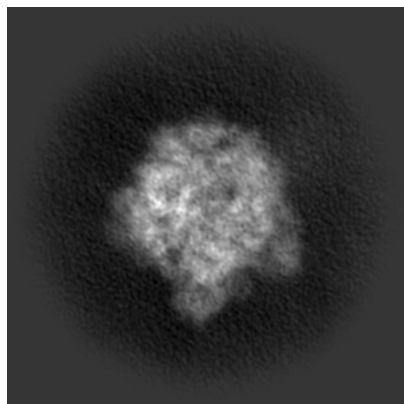
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-51835. These allow visual inspection of the internal detail of the map and identification of artifacts.

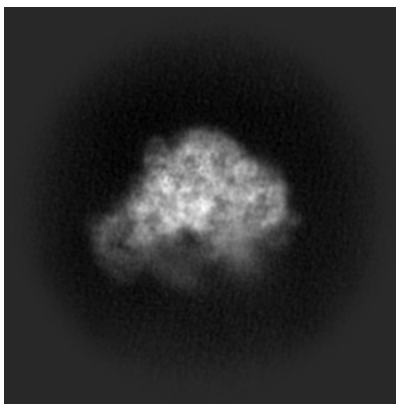
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

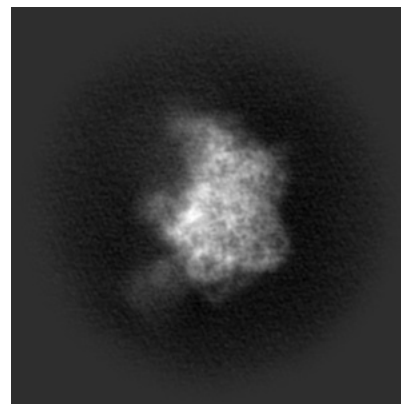
6.1.1 Primary map



X

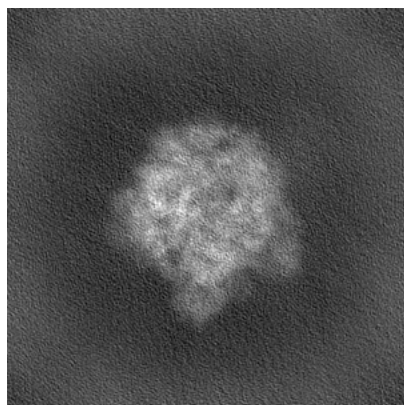


Y

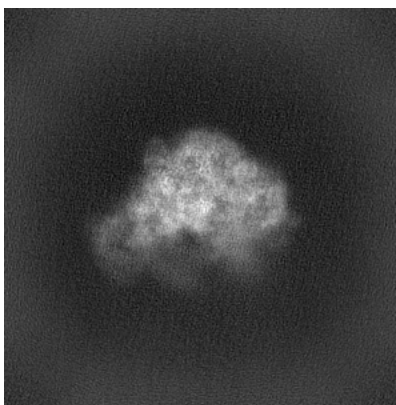


Z

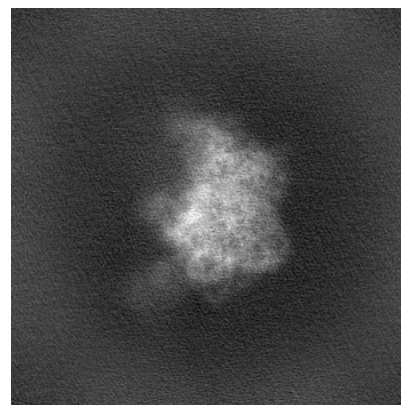
6.1.2 Raw map



X



Y

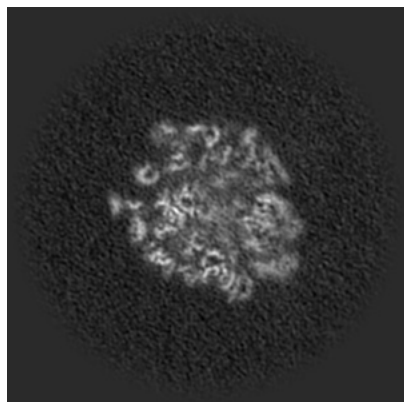


Z

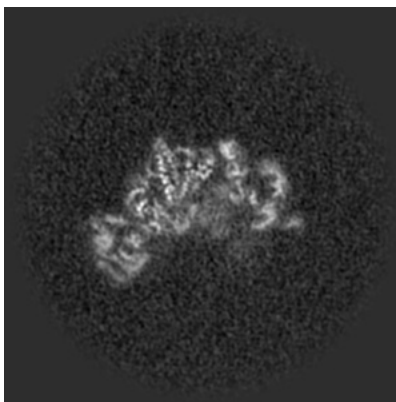
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

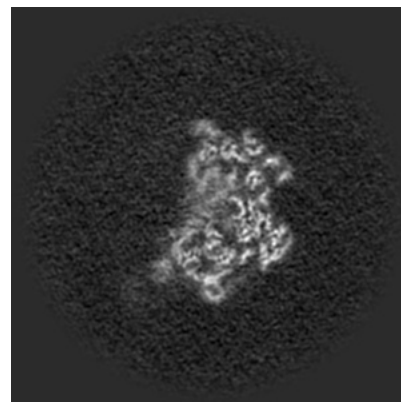
6.2.1 Primary map



X Index: 150

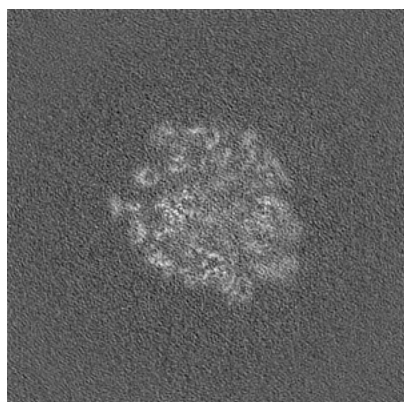


Y Index: 150

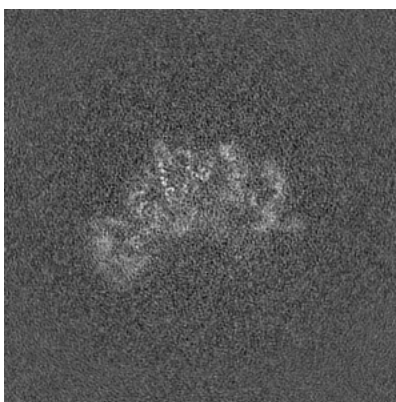


Z Index: 150

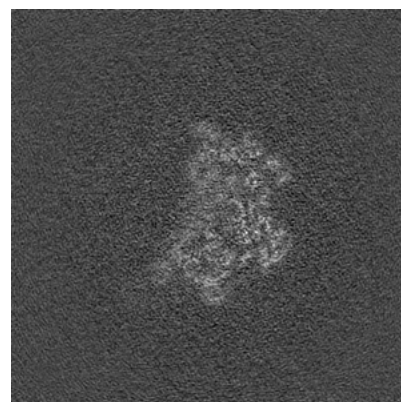
6.2.2 Raw map



X Index: 150



Y Index: 150

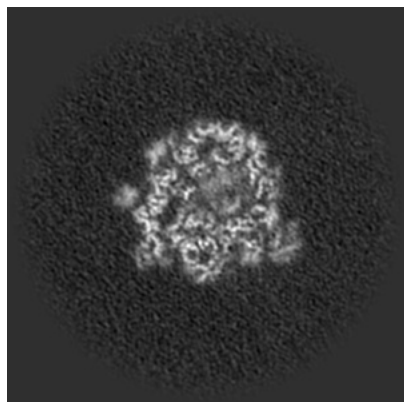


Z Index: 150

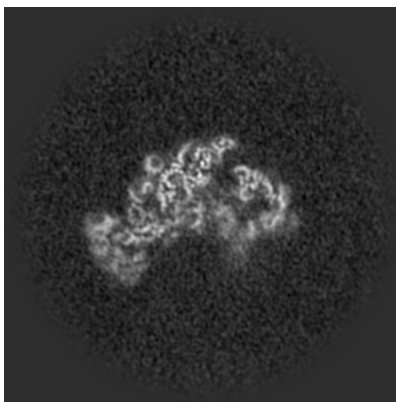
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

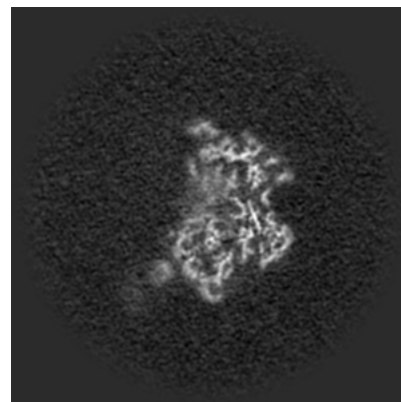
6.3.1 Primary map



X Index: 163

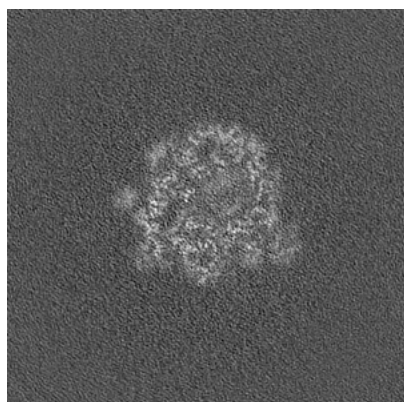


Y Index: 142

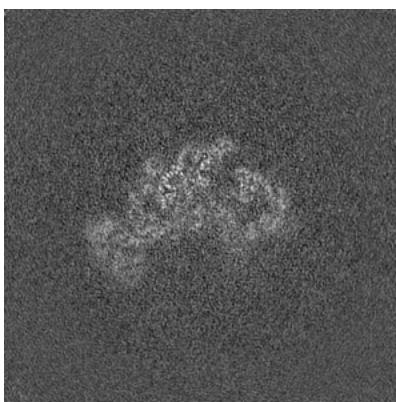


Z Index: 148

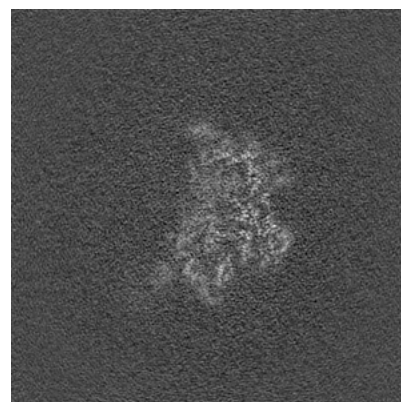
6.3.2 Raw map



X Index: 163



Y Index: 142

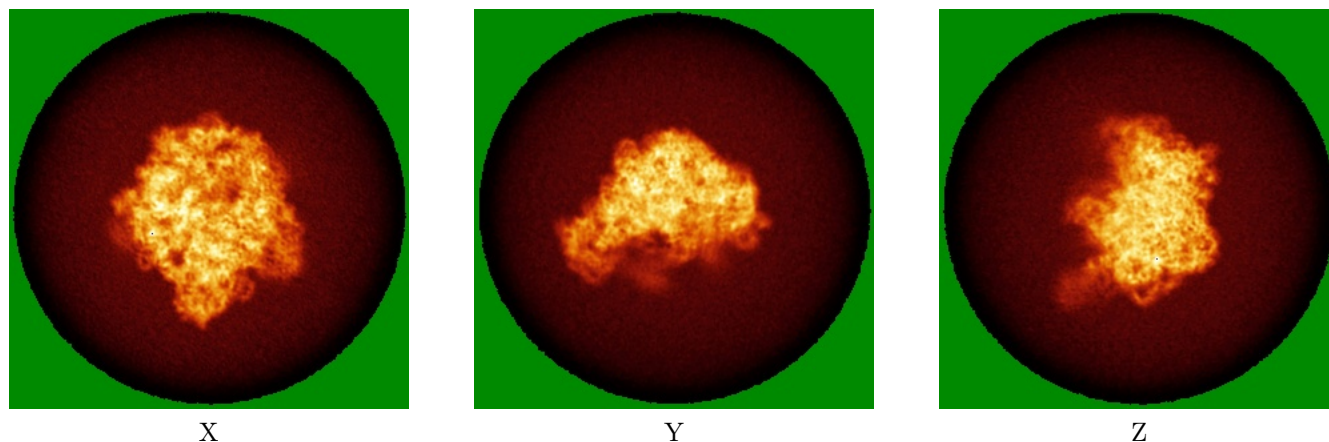


Z Index: 147

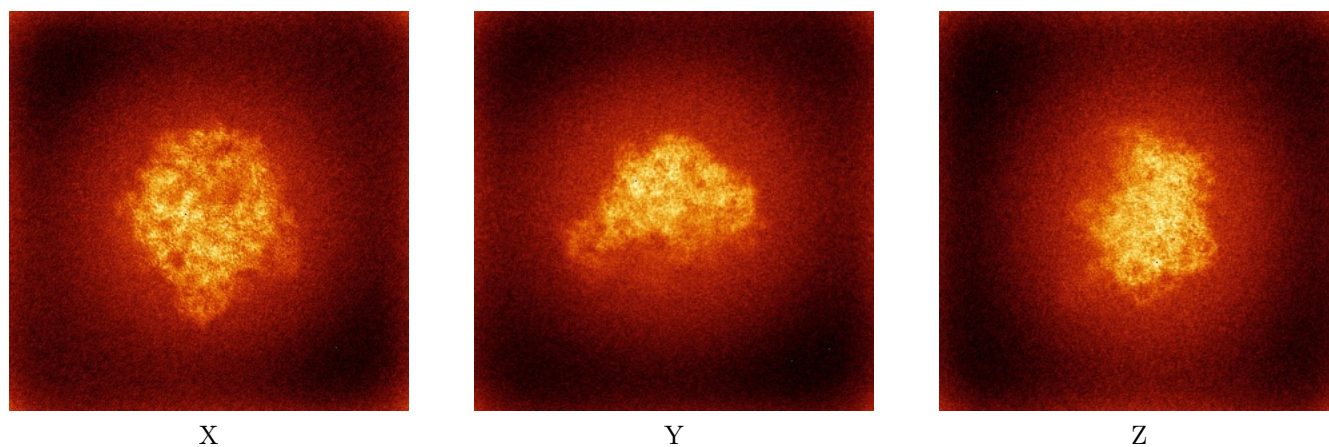
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal standard-deviation projections (False-color) [i](#)

6.4.1 Primary map



6.4.2 Raw map



The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



X



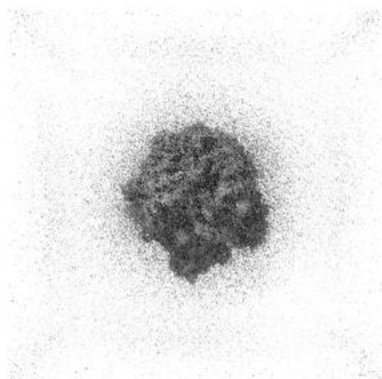
Y



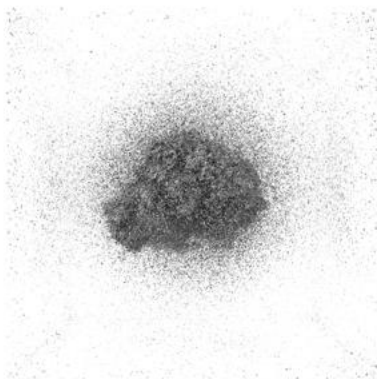
Z

The images above show the 3D surface view of the map at the recommended contour level 0.337. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

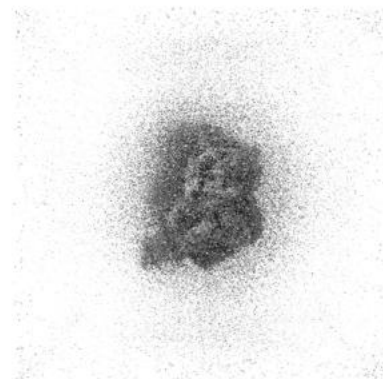
6.5.2 Raw map



X



Y



Z

These images show the 3D surface of the raw map. The raw map's contour level was selected so that its surface encloses the same volume as the primary map does at its recommended contour level.

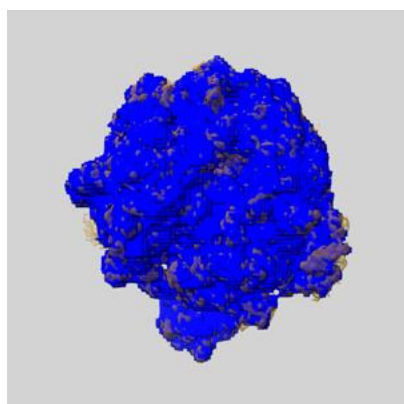
6.6 Mask visualisation [i](#)

This section shows the 3D surface view of the primary map at 50% transparency overlaid with the specified mask at 0% transparency

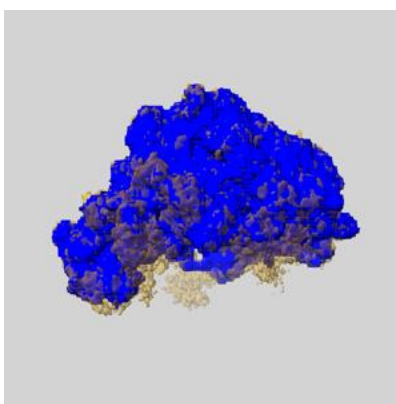
A mask typically either:

- Encompasses the whole structure
- Separates out a domain, a functional unit, a monomer or an area of interest from a larger structure

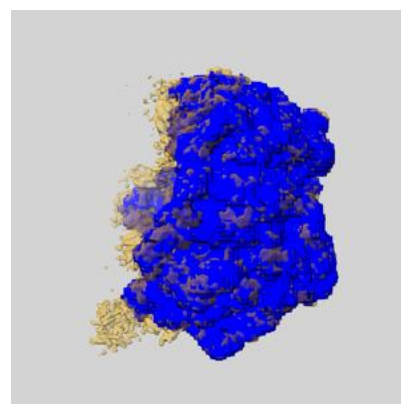
6.6.1 emd_51835_msk_1.map [i](#)



X



Y

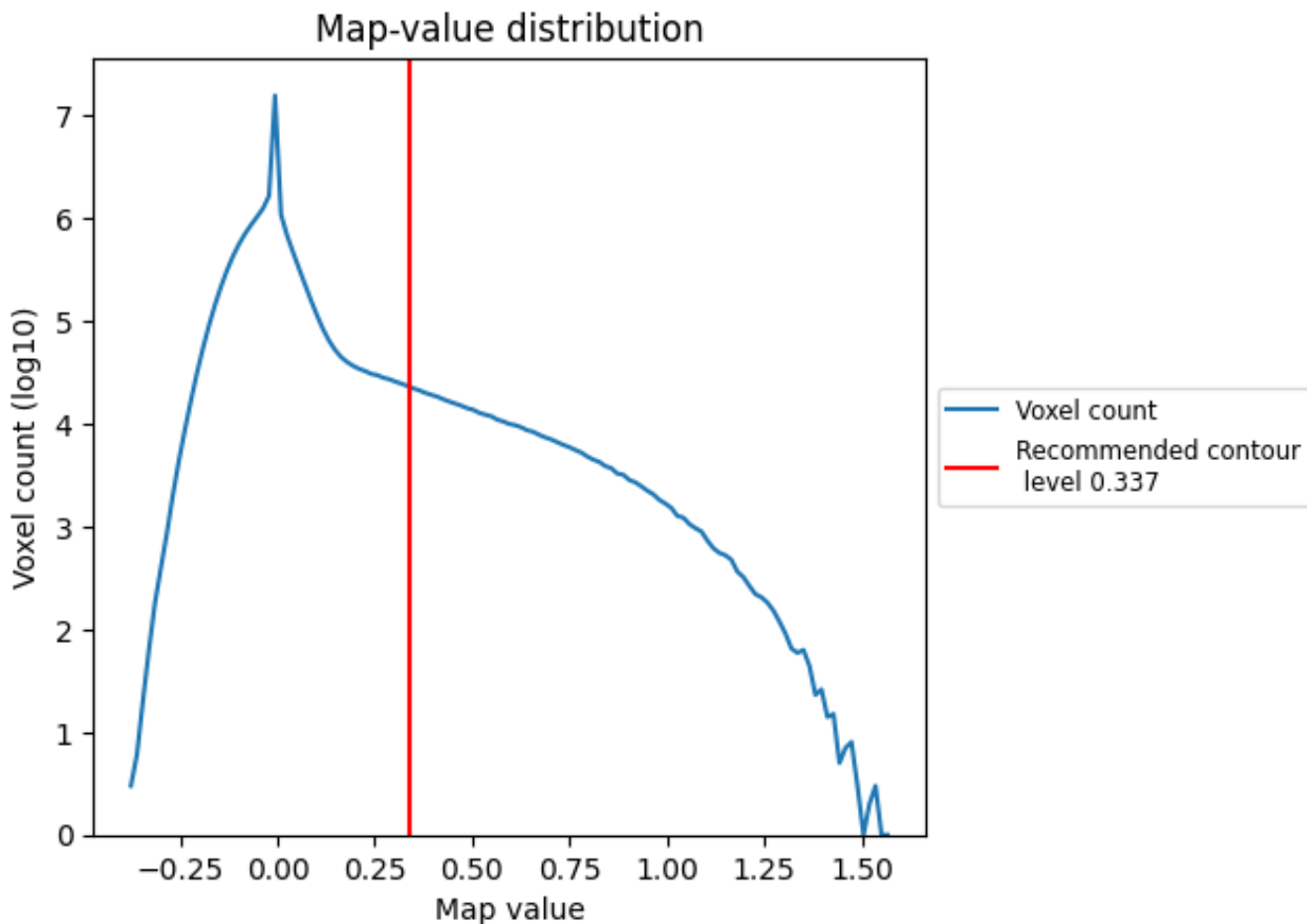


Z

7 Map analysis [i](#)

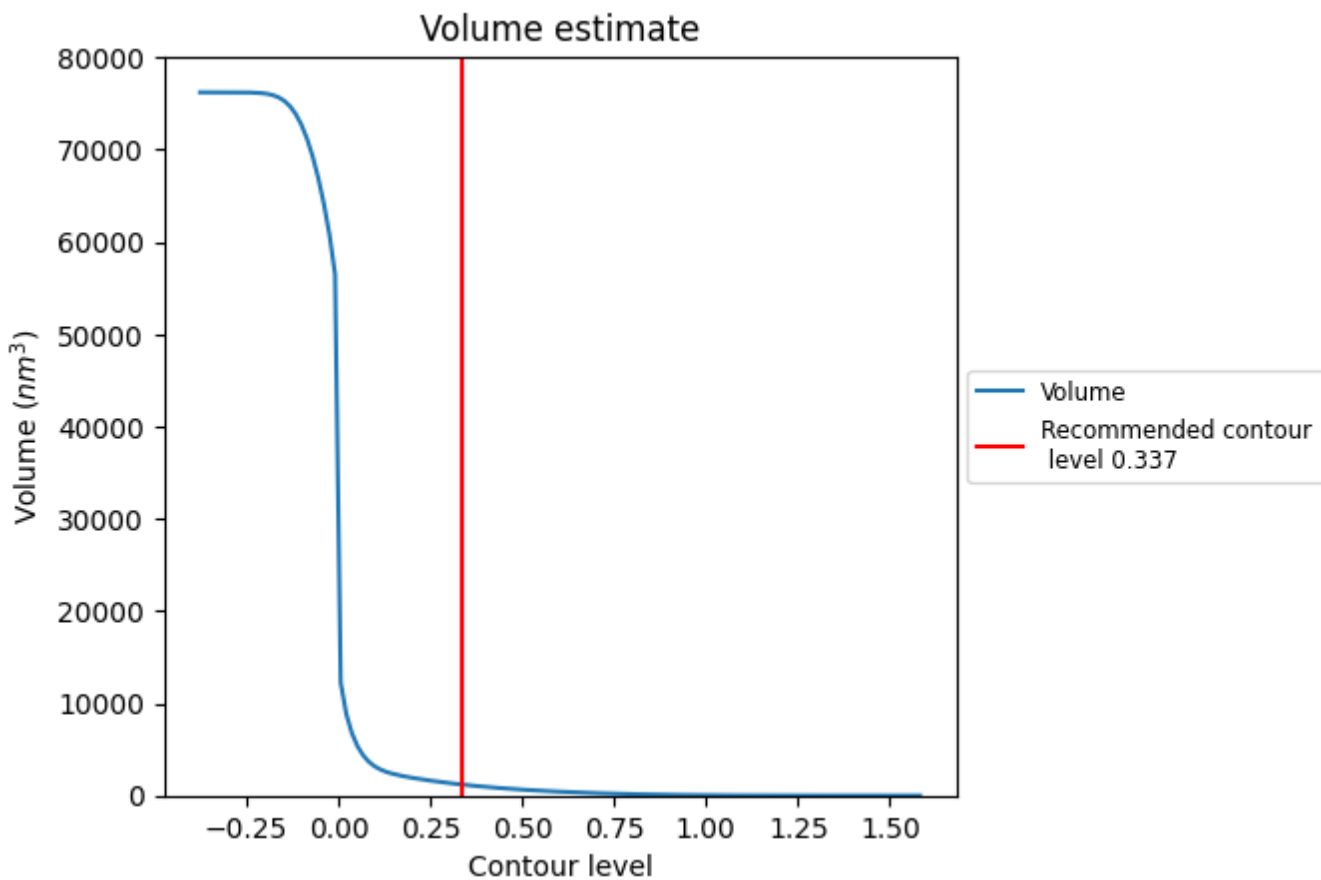
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution [i](#)



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.

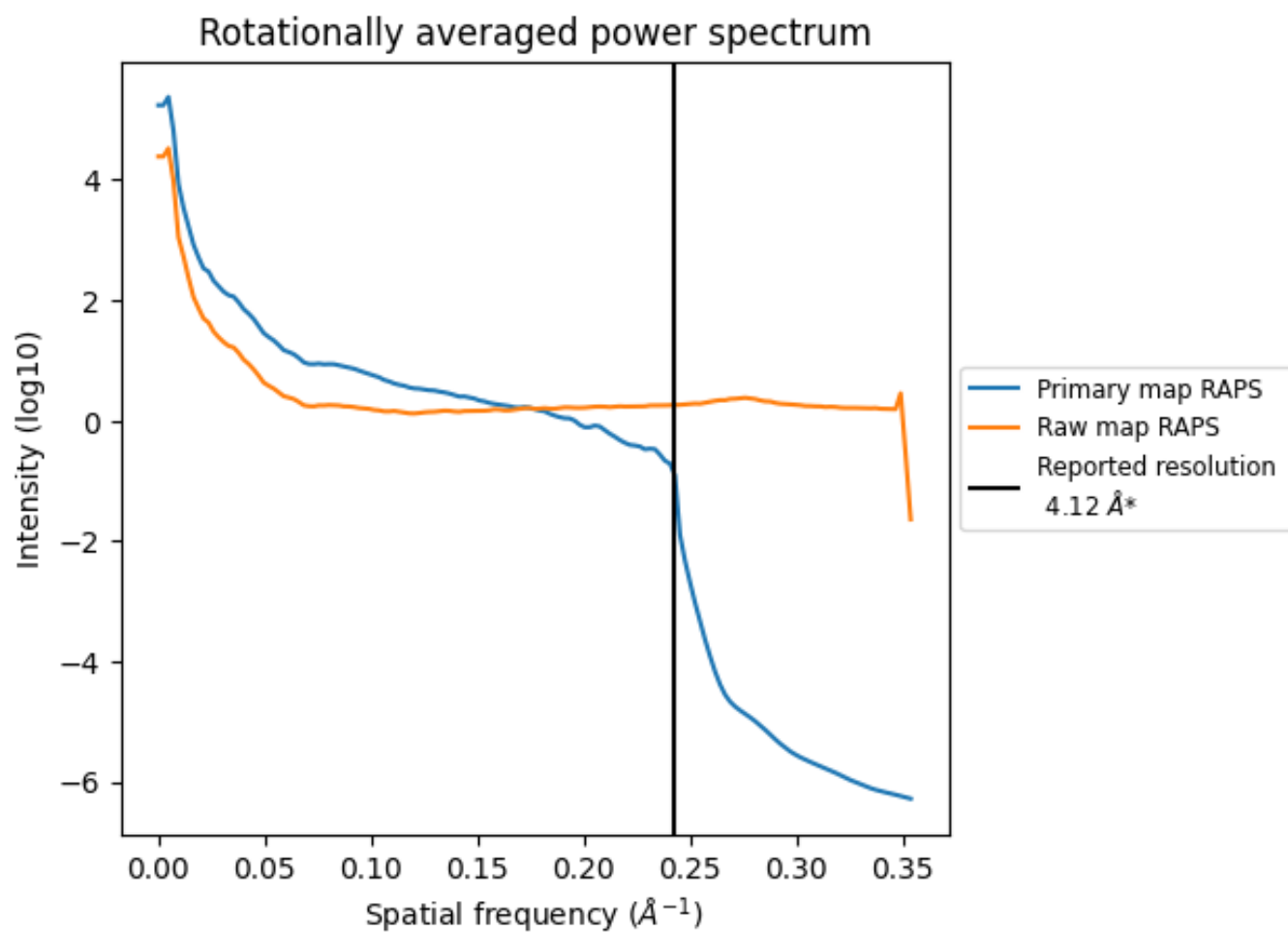
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 1192 nm³; this corresponds to an approximate mass of 1077 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

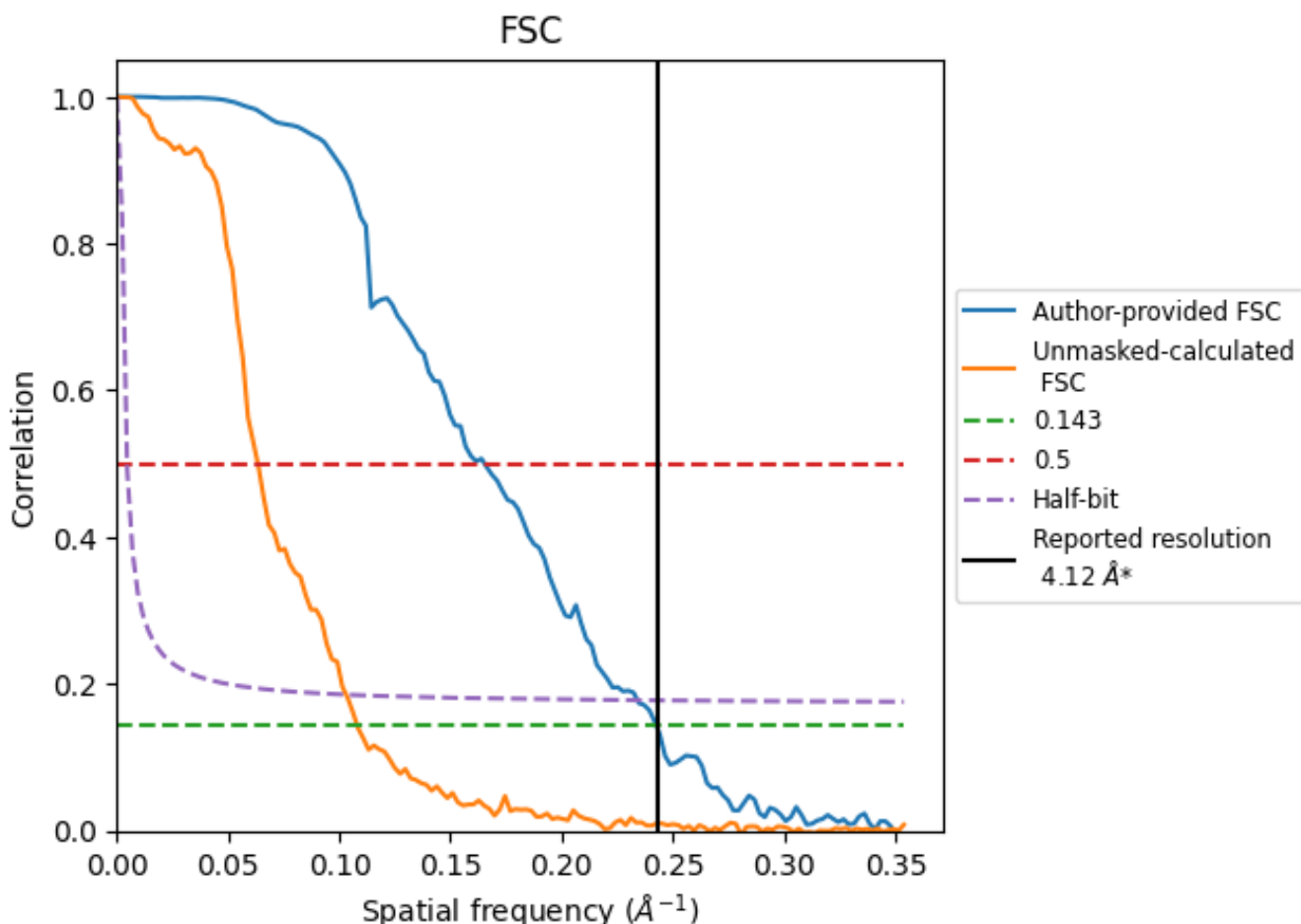


*Reported resolution corresponds to spatial frequency of 0.243 Å⁻¹

8 Fourier-Shell correlation [i](#)

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 [i](#)



*Reported resolution corresponds to spatial frequency of 0.243 Å⁻¹

8.2 Resolution estimates [i](#)

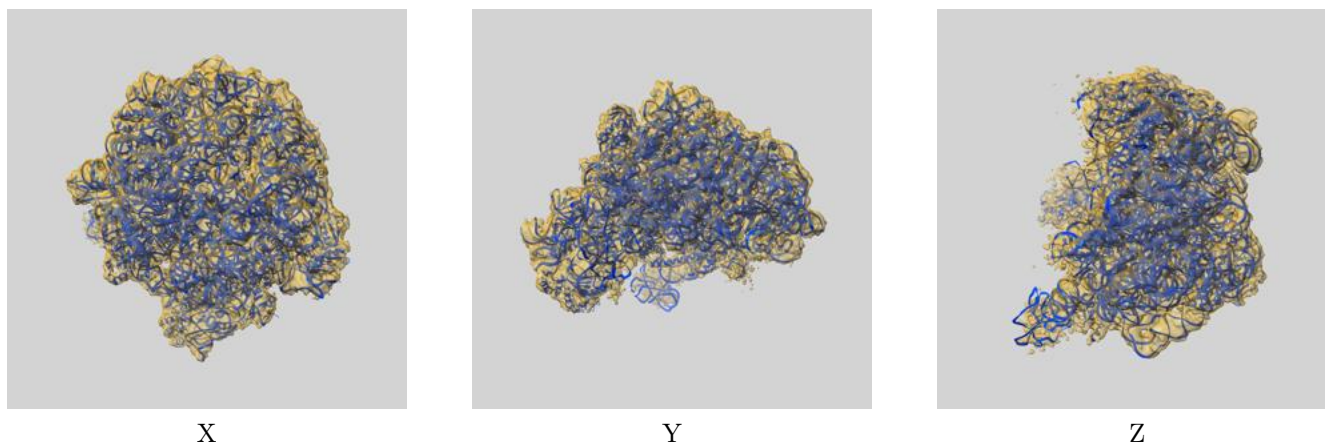
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	4.12	-	-
Author-provided FSC curve	4.12	6.05	4.27
Unmasked-calculated*	9.25	15.77	9.70

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 9.25 differs from the reported value 4.12 by more than 10 %

9 Map-model fit [i](#)

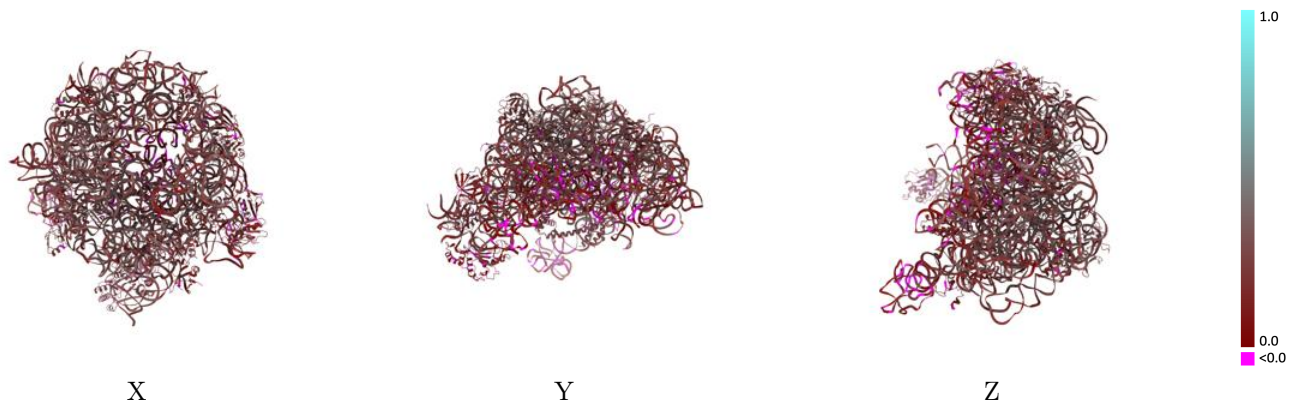
This section contains information regarding the fit between EMDB map EMD-51835 and PDB model 9H3R. Per-residue inclusion information can be found in section 3 on page 8.

9.1 Map-model overlay [i](#)



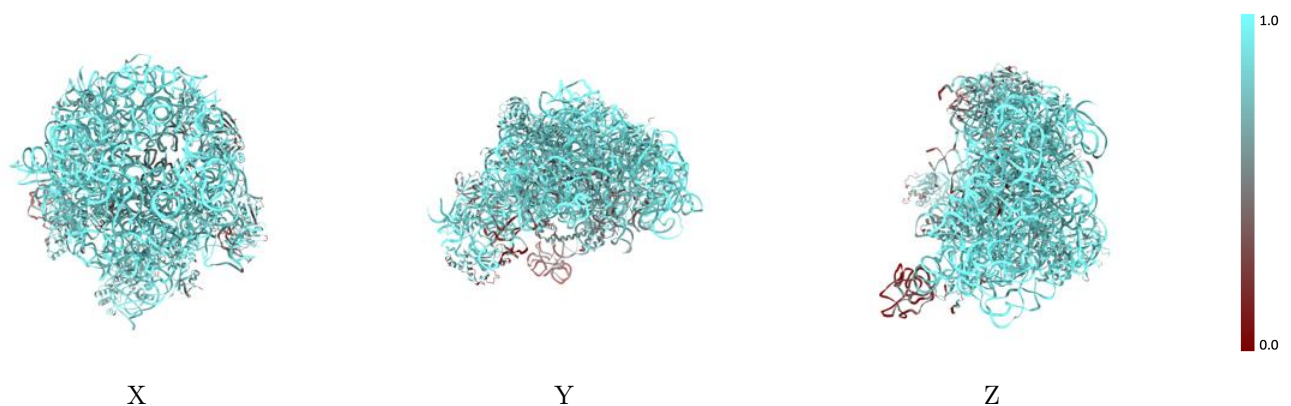
The images above show the 3D surface view of the map at the recommended contour level 0.337 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

9.2 Q-score mapped to coordinate model [i](#)



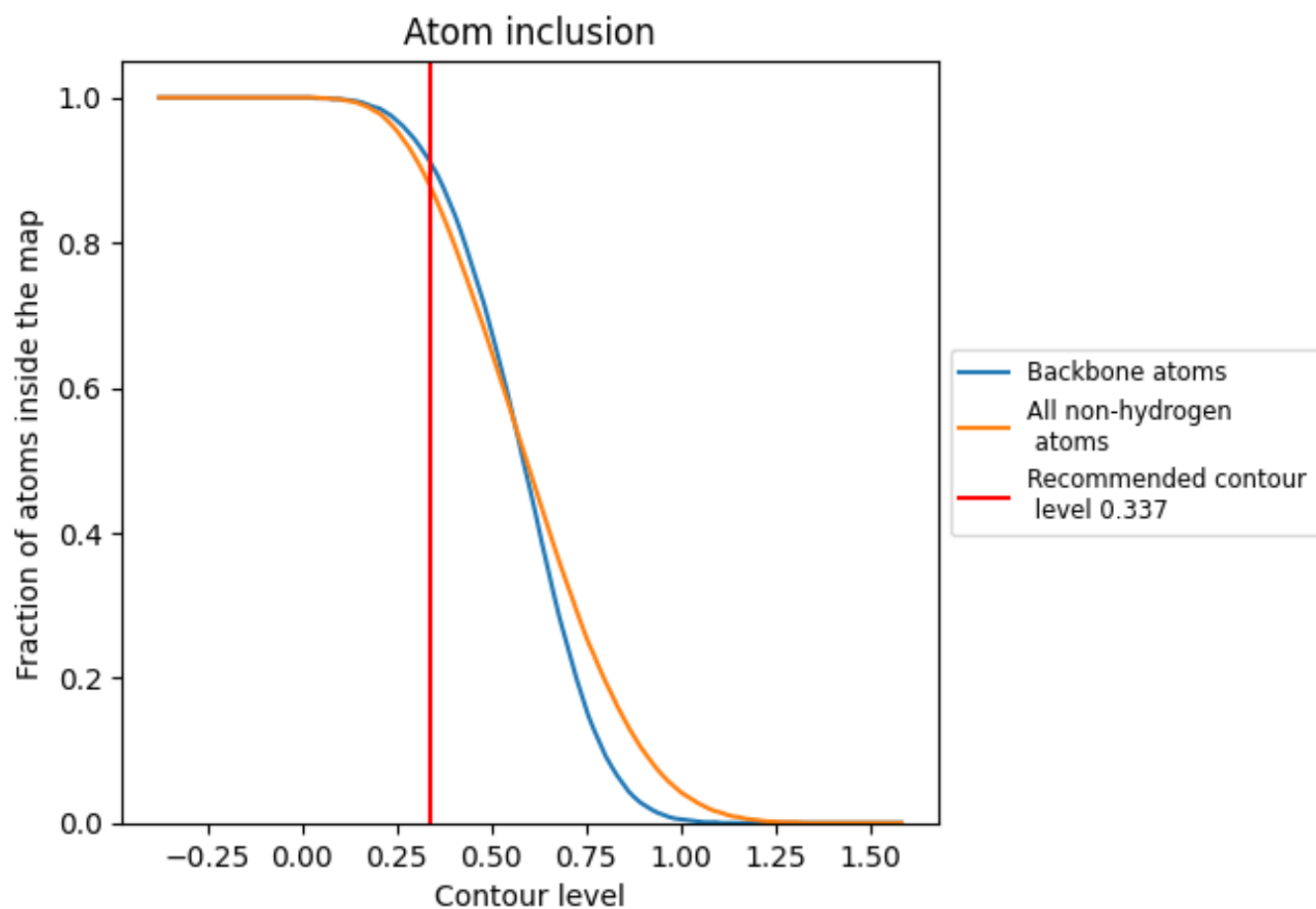
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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](#)



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 (0.337).





















































9.4 Atom inclusion [i](#)



At the recommended contour level, 91% of all backbone atoms, 88% 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 (0.337) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.8800	 0.2310
2	 0.8580	 0.2480
4	 0.7190	 0.1200
A	 0.9120	 0.2370
B	 0.9570	 0.2280
C	 0.6580	 0.2010
D	 0.8100	 0.2350
E	 0.8150	 0.2510
F	 0.6760	 0.1020
G	 0.7030	 0.1600
H	 0.6160	 0.1150
J	 0.8720	 0.2850
K	 0.6540	 0.1930
L	 0.7220	 0.1950
N	 0.8410	 0.2180
O	 0.8600	 0.1800
P	 0.6980	 0.1950
Q	 0.8890	 0.2820
R	 0.8460	 0.2800
T	 0.8310	 0.2720
U	 0.8310	 0.2760
V	 0.7100	 0.1720
W	 0.8410	 0.2680
X	 0.8420	 0.2380
Y	 0.8050	 0.2330
Z	 0.8560	 0.2580

