



Full wwPDB EM Validation Report ⓘ

Mar 20, 2024 – 08:00 AM JST

PDB ID : 7BV8
EMDB ID : EMD-30215
Title : Mature 50S ribosomal subunit from RrmJ knock out E.coli strain
Authors : Wang, W.; Li, W.Q.; Ge, X.L.; Yan, K.G.; Mandava, C.S.; Sanyal, S.; Gao, N.
Deposited on : 2020-04-09
Resolution : 3.14 Å(reported)
Based on initial models : 4YBB, 5H5U

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:

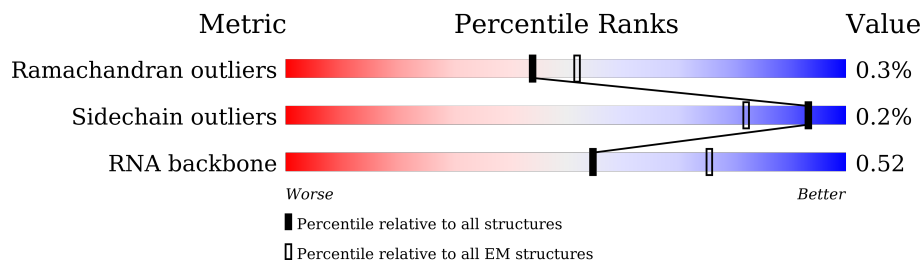
EMDB validation analysis : 0.0.1.dev70
MolProbity : 4.02b-467
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.36

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 3.14 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 $\leq 5\%$. 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	A	2903	 6% 81% 19%
2	B	120	 1% 91% 9%
3	C	273	 1% 99% ..
4	D	209	 1% 99% .
5	E	201	 9% 100%
6	F	179	 28% 98% ..
7	G	177	 5% 99% ..
8	H	149	 67% 99% ..

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Mol	Chain	Length	Quality of chain
9	I	165	72% 79% 18%
10	J	142	44% 47% 50%
11	K	142	100%
12	L	123	100%
13	M	144	99%
14	N	136	100%
15	O	127	6% 98%
16	P	117	100%
17	Q	115	7% 99%
18	R	118	99%
19	S	103	98%
20	T	110	100%
21	U	100	5% 93% 7%
22	V	104	6% 96%
23	W	94	5% 100%
24	X	85	89% 11%
25	Y	78	99%
26	Z	63	11% 98%
27	a	59	5% 98%
28	b	57	5% 98%
29	c	55	11% 93% 7%
30	d	46	100%
31	e	65	95%
32	f	38	100%

2 Entry composition

There are 32 unique types of molecules in this entry. The entry contains 91505 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 RNA chain called 23S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
1	A	2897	62240	27765	11457	20119	2899	3	0

- Molecule 2 is a RNA chain called 5S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
2	B	120	2569	1144	468	837	120	0	0

- Molecule 3 is a protein called 50S ribosomal protein L2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	C	271	2082	1288	423	364	7	0	0

- Molecule 4 is a protein called 50S ribosomal protein L3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	D	209	1565	979	288	294	4	0	0

- Molecule 5 is a protein called 50S ribosomal protein L4.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	E	201	1552	974	283	290	5	0	0

- Molecule 6 is a protein called 50S ribosomal protein L5.

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

- Molecule 7 is a protein called 50S ribosomal protein L6.

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

- Molecule 8 is a protein called 50S ribosomal protein L9.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
8	H	148	1101	694	196	210	1	0	0

- Molecule 9 is a protein called 50S ribosomal protein L10.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
9	I	135	1023	648	179	192	4	0	0

- Molecule 10 is a protein called 50S ribosomal protein L11.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
10	J	71	509	313	93	100	3	0	0

- Molecule 11 is a protein called 50S ribosomal protein L13.

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

- Molecule 12 is a protein called 50S ribosomal protein L14.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
12	L	123	946	593	181	166	6	0	0

- Molecule 13 is a protein called 50S ribosomal protein L15.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
13	M	144	1053	654	207	190	2	0	0

- Molecule 14 is a protein called 50S ribosomal protein L16.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	N	136	Total	C	N	O	S	1	0
			1082	691	208	177	6		

- Molecule 15 is a protein called 50S ribosomal protein L17.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	O	125	Total	C	N	O	S	0	0
			993	613	202	173	5		

- Molecule 16 is a protein called 50S ribosomal protein L18.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	P	117	Total	C	N	O	S	0	0
			900	557	179	163	1		

- Molecule 17 is a protein called 50S ribosomal protein L19.

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

- Molecule 18 is a protein called 50S ribosomal protein L20.

Mol	Chain	Residues	Atoms				AltConf	Trace
18	R	117	Total	C	N	O	0	0
			947	604	192	151		

- Molecule 19 is a protein called 50S ribosomal protein L21.

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

- Molecule 20 is a protein called 50S ribosomal protein L22.

Mol	Chain	Residues	Atoms					AltConf	Trace
20	T	110	Total	C	N	O	S	0	0
			857	532	166	156	3		

- Molecule 21 is a protein called 50S ribosomal protein L23.

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

- Molecule 22 is a protein called 50S ribosomal protein L24.

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

- Molecule 23 is a protein called 50S ribosomal protein L25.

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

- Molecule 24 is a protein called 50S ribosomal protein L27.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
24	X	76	591	365	121	104	1	1	0

- Molecule 25 is a protein called 50S ribosomal protein L28.

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

- Molecule 26 is a protein called 50S ribosomal protein L29.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
26	Z	62	501	308	98	94	1	0	0

- Molecule 27 is a protein called 50S ribosomal protein L30.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
27	a	58	463	290	90	81	2	2	0

- Molecule 28 is a protein called 50S ribosomal protein L32.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
28	b	56	444	269	94	80	1	0	0

- Molecule 29 is a protein called 50S ribosomal protein L33.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
29	c	51	414	266	76	72	0	0

- Molecule 30 is a protein called 50S ribosomal protein L34.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
30	d	46	377	228	90	57	2	0	0

- Molecule 31 is a protein called 50S ribosomal protein L35.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
31	e	64	504	323	105	74	2	0	0

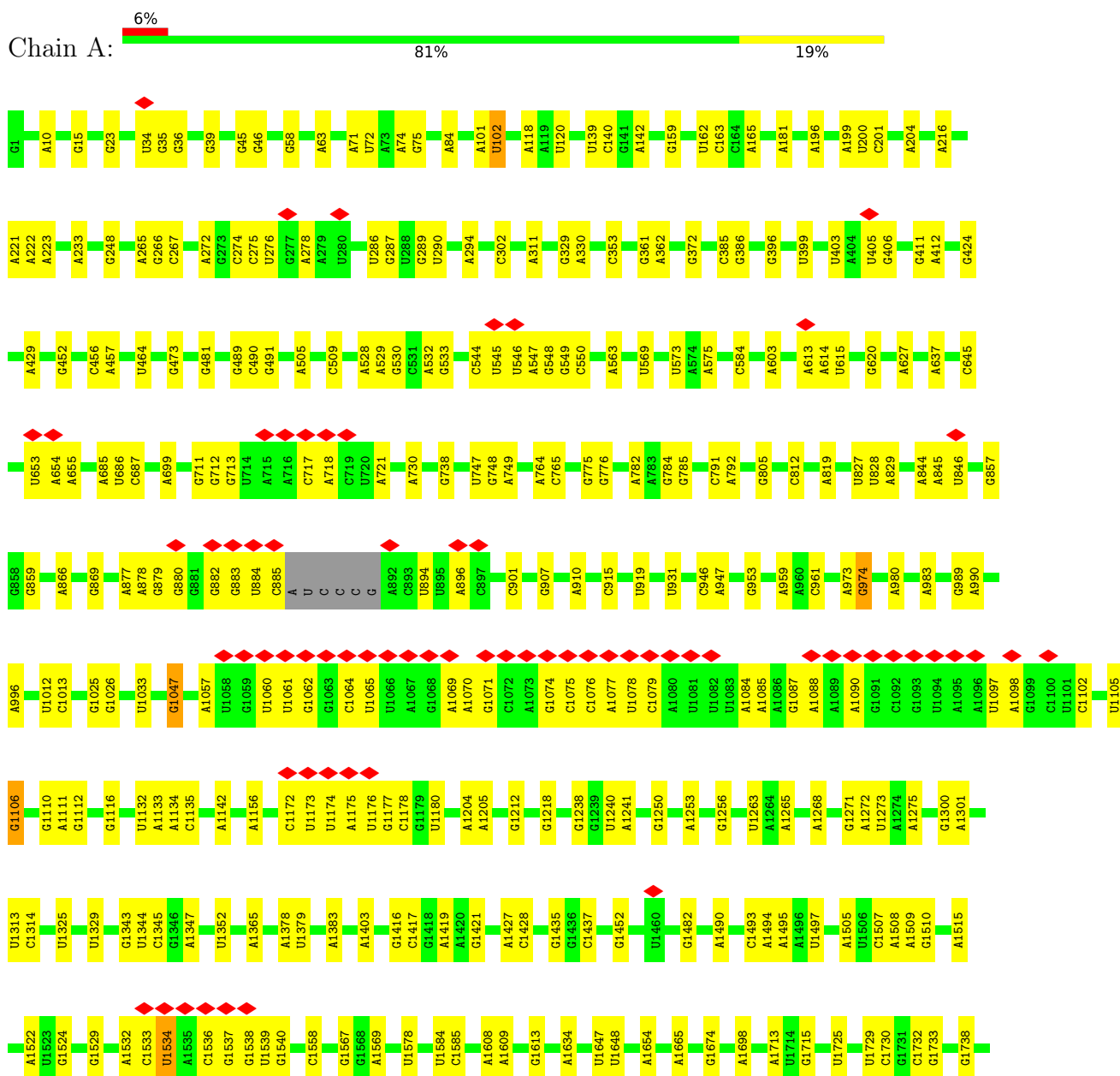
- Molecule 32 is a protein called 50S ribosomal protein L36.

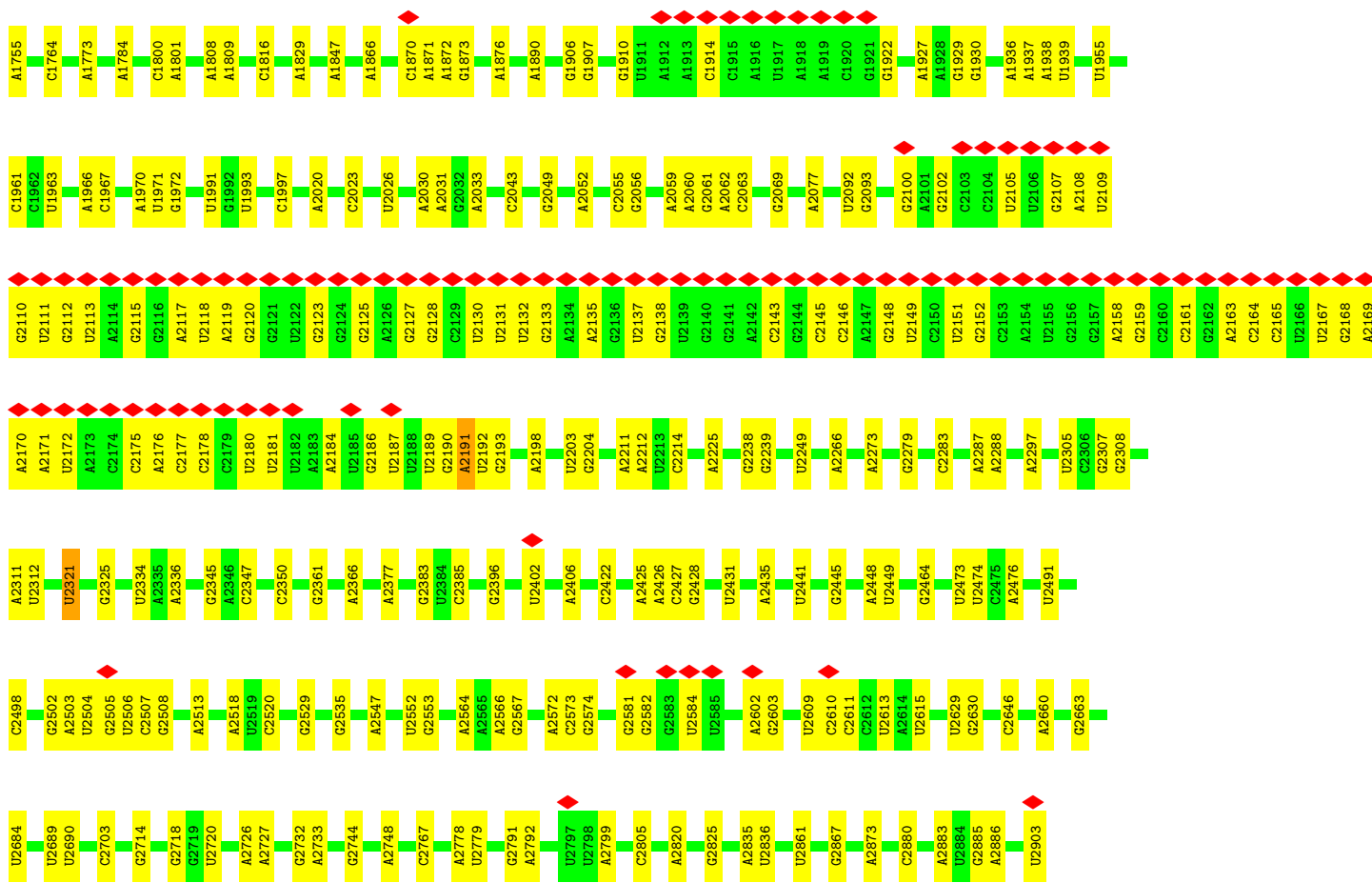
Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
32	f	38	302	185	65	48	4	0	0

3 Residue-property plots

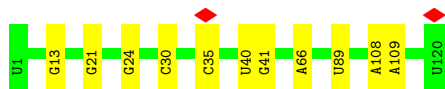
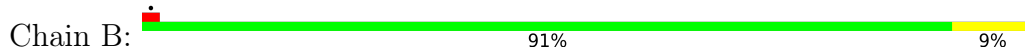
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion 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: 23S rRNA

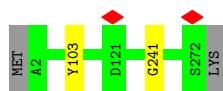




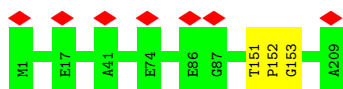
• Molecule 2: 5S rRNA



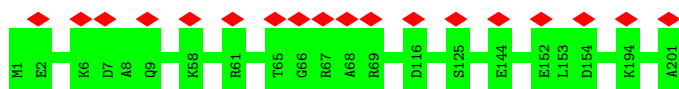
• Molecule 3: 50S ribosomal protein L2



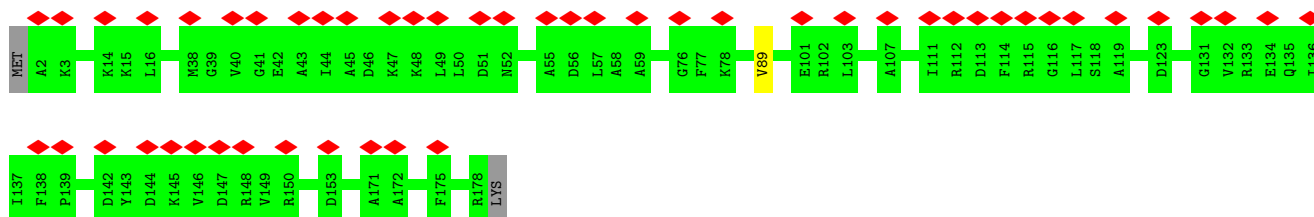
• Molecule 4: 50S ribosomal protein L3



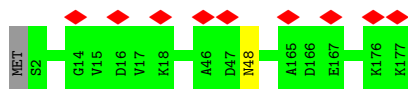
• Molecule 5: 50S ribosomal protein L4



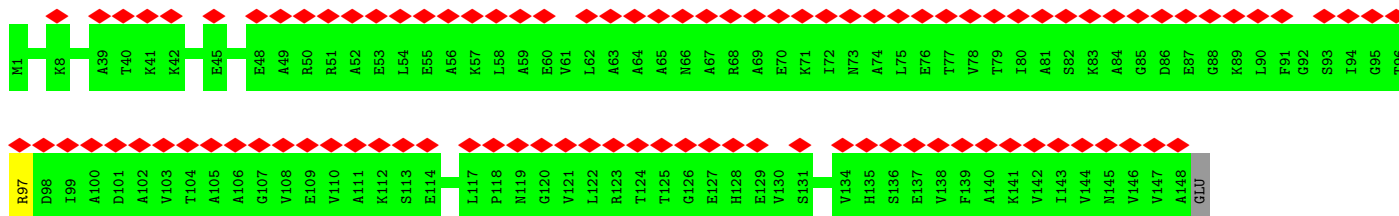
- Molecule 6: 50S ribosomal protein L5



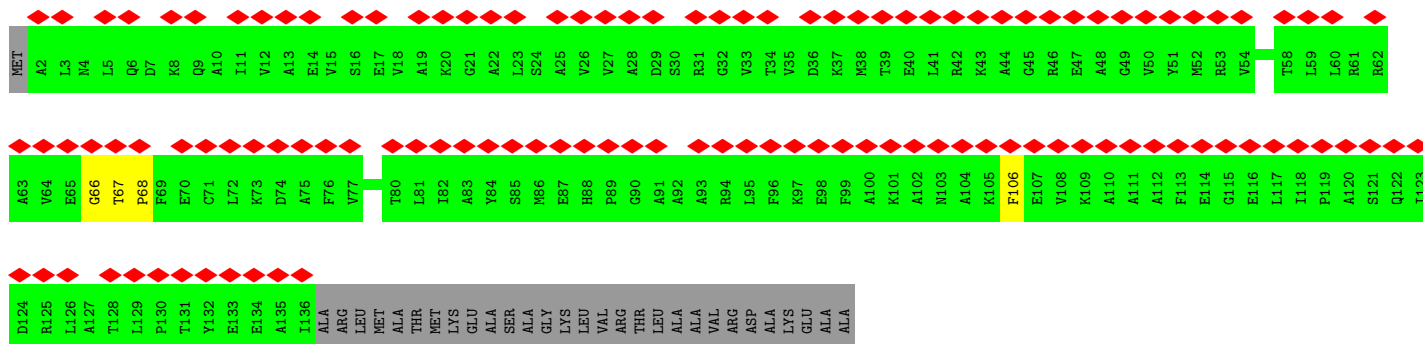
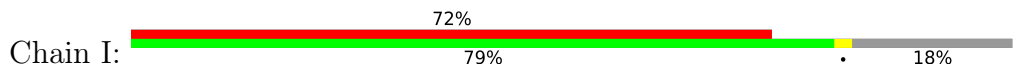
- Molecule 7: 50S ribosomal protein L6

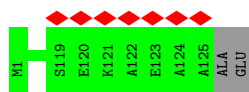


- Molecule 8: 50S ribosomal protein L9

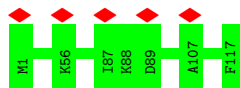


- Molecule 9: 50S ribosomal protein L10

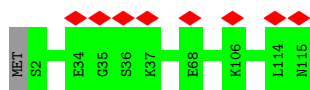




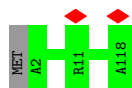
- Molecule 16: 50S ribosomal protein L18



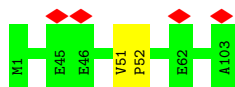
- Molecule 17: 50S ribosomal protein L19



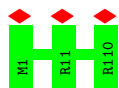
- Molecule 18: 50S ribosomal protein L20



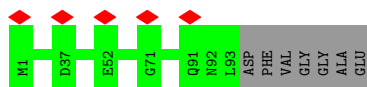
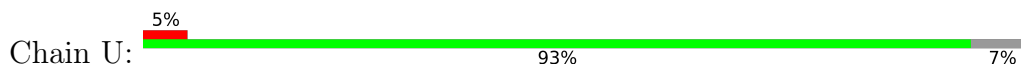
- Molecule 19: 50S ribosomal protein L21



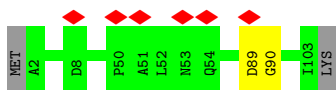
- Molecule 20: 50S ribosomal protein L22



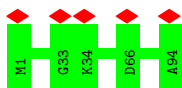
- Molecule 21: 50S ribosomal protein L23



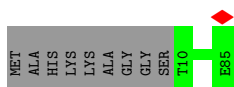
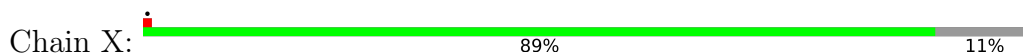
- Molecule 22: 50S ribosomal protein L24



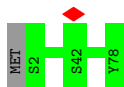
- Molecule 23: 50S ribosomal protein L25



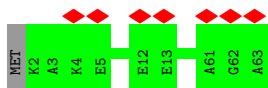
- Molecule 24: 50S ribosomal protein L27



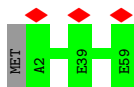
- Molecule 25: 50S ribosomal protein L28



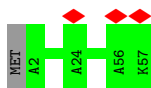
- Molecule 26: 50S ribosomal protein L29



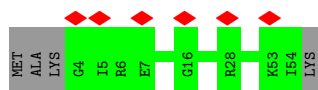
- Molecule 27: 50S ribosomal protein L30



- Molecule 28: 50S ribosomal protein L32



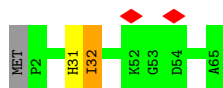
- Molecule 29: 50S ribosomal protein L33



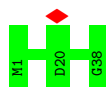
- Molecule 30: 50S ribosomal protein L34



- Molecule 31: 50S ribosomal protein L35



- Molecule 32: 50S ribosomal protein L36



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	98194	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION; CTF amplitude correction was performed following 3D reconstruction.	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	45	Depositor
Minimum defocus (nm)	-1000	Depositor
Maximum defocus (nm)	-2000	Depositor
Magnification	75000	Depositor
Image detector	FEI FALCON II (4k x 4k)	Depositor
Maximum map value	0.901	Depositor
Minimum map value	-0.547	Depositor
Average map value	0.001	Depositor
Map value standard deviation	0.040	Depositor
Recommended contour level	0.11	Depositor
Map size (\AA)	345.6, 345.6, 345.6	wwPDB
Map dimensions	320, 320, 320	wwPDB
Map angles ($^\circ$)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (\AA)	1.08, 1.08, 1.08	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	A	0.75	0/69735	0.88	20/108791 (0.0%)
2	B	0.59	0/2872	0.85	0/4478
3	C	0.44	0/2121	0.53	0/2852
4	D	0.46	0/1586	0.65	2/2134 (0.1%)
5	E	0.36	0/1571	0.48	0/2113
6	F	0.29	0/1434	0.45	0/1926
7	G	0.35	0/1343	0.49	0/1816
8	H	0.29	0/1112	0.48	0/1503
9	I	0.28	0/1037	0.59	2/1400 (0.1%)
10	J	0.27	0/511	0.70	1/683 (0.1%)
11	K	0.45	0/1152	0.48	0/1551
12	L	0.44	0/955	0.52	0/1279
13	M	0.36	0/1062	0.53	0/1413
14	N	0.40	0/1104	0.51	0/1474
15	O	0.41	0/1006	0.50	0/1345
16	P	0.35	0/910	0.47	0/1219
17	Q	0.43	0/929	0.48	0/1242
18	R	0.49	0/960	0.46	0/1278
19	S	0.42	0/829	0.53	0/1107
20	T	0.36	0/864	0.48	0/1156
21	U	0.39	0/744	0.48	0/994
22	V	0.35	0/787	0.52	0/1051
23	W	0.37	0/766	0.46	0/1025
24	X	0.40	0/598	0.47	0/790
25	Y	0.37	0/635	0.47	0/848
26	Z	0.29	0/502	0.43	0/667
27	a	0.34	0/467	0.49	0/623
28	b	0.40	0/450	0.50	0/599
29	c	0.39	0/421	0.54	0/561
30	d	0.38	0/380	0.52	0/498
31	e	0.37	0/513	0.52	0/676
32	f	0.39	0/303	0.50	0/397
All	All	0.66	0/99659	0.80	25/149489 (0.0%)

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
10	J	0	3
13	M	0	1
22	V	0	1
31	e	0	1
All	All	0	6

There are no bond length outliers.

All (25) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	D	151	THR	C-N-CD	-14.93	87.76	120.60
1	A	1314	C	C2-N1-C1'	7.64	127.20	118.80
1	A	102	U	C2-N1-C1'	7.39	126.57	117.70
9	I	67	THR	C-N-CD	-7.14	104.90	120.60
1	A	2321	U	N3-C2-O2	-6.89	117.38	122.20
1	A	1313	U	C2-N1-C1'	6.51	125.52	117.70
1	A	102	U	N1-C2-O2	6.26	127.18	122.80
4	D	151	THR	C-N-CA	6.16	147.85	122.00
1	A	1047	G	O4'-C1'-N9	5.81	112.85	108.20
1	A	1314	C	C6-N1-C1'	-5.75	113.90	120.80
1	A	2646	C	C5-C6-N1	5.60	123.80	121.00
10	J	91	GLY	C-N-CA	5.46	135.35	121.70
1	A	102	U	C6-N1-C1'	-5.40	113.64	121.20
1	A	2063	C	C2-N1-C1'	5.36	124.69	118.80
9	I	66	GLY	C-N-CA	5.23	134.77	121.70
1	A	974	G	O4'-C1'-N9	5.21	112.37	108.20
1	A	1961	C	N1-C2-O2	5.21	122.03	118.90
1	A	545	U	N3-C2-O2	-5.13	118.61	122.20
1	A	545	U	C2-N1-C1'	5.12	123.84	117.70
1	A	2191	A	P-O3'-C3'	5.10	125.82	119.70
1	A	1534	U	O4'-C1'-N1	5.05	112.24	108.20
1	A	1313	U	N3-C2-O2	-5.05	118.66	122.20
1	A	1313	U	N1-C2-O2	5.05	126.33	122.80
1	A	1343	G	C4-N9-C1'	5.04	133.05	126.50
1	A	1106	G	C4-C5-N7	5.04	112.81	110.80

There are no chirality outliers.

All (6) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
10	J	77	ALA	Peptide
10	J	95	LYS	Peptide
10	J	97	LYS	Peptide
13	M	35	HIS	Peptide
22	V	89	ASP	Peptide
31	e	31	HIS	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	
3	C	269/273 (98%)	246 (91%)	22 (8%)	1 (0%)	34	67
4	D	207/209 (99%)	189 (91%)	16 (8%)	2 (1%)	15	47
5	E	199/201 (99%)	183 (92%)	16 (8%)	0	100	100
6	F	175/179 (98%)	158 (90%)	17 (10%)	0	100	100
7	G	174/177 (98%)	159 (91%)	14 (8%)	1 (1%)	25	59
8	H	146/149 (98%)	129 (88%)	17 (12%)	0	100	100
9	I	133/165 (81%)	115 (86%)	16 (12%)	2 (2%)	10	37
10	J	69/142 (49%)	50 (72%)	19 (28%)	0	100	100
11	K	140/142 (99%)	133 (95%)	7 (5%)	0	100	100
12	L	121/123 (98%)	115 (95%)	6 (5%)	0	100	100
13	M	142/144 (99%)	127 (89%)	15 (11%)	0	100	100
14	N	135/136 (99%)	125 (93%)	10 (7%)	0	100	100
15	O	123/127 (97%)	111 (90%)	12 (10%)	0	100	100
16	P	115/117 (98%)	108 (94%)	7 (6%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
17	Q	112/115 (97%)	103 (92%)	9 (8%)	0	100	100
18	R	115/118 (98%)	111 (96%)	4 (4%)	0	100	100
19	S	101/103 (98%)	94 (93%)	6 (6%)	1 (1%)	15	47
20	T	108/110 (98%)	100 (93%)	8 (7%)	0	100	100
21	U	91/100 (91%)	82 (90%)	9 (10%)	0	100	100
22	V	100/104 (96%)	88 (88%)	11 (11%)	1 (1%)	15	47
23	W	92/94 (98%)	88 (96%)	4 (4%)	0	100	100
24	X	75/85 (88%)	68 (91%)	7 (9%)	0	100	100
25	Y	75/78 (96%)	68 (91%)	7 (9%)	0	100	100
26	Z	60/63 (95%)	57 (95%)	3 (5%)	0	100	100
27	a	57/59 (97%)	53 (93%)	4 (7%)	0	100	100
28	b	54/57 (95%)	51 (94%)	3 (6%)	0	100	100
29	c	49/55 (89%)	46 (94%)	3 (6%)	0	100	100
30	d	44/46 (96%)	41 (93%)	3 (7%)	0	100	100
31	e	62/65 (95%)	56 (90%)	5 (8%)	1 (2%)	9	35
32	f	36/38 (95%)	34 (94%)	2 (6%)	0	100	100
All	All	3379/3574 (94%)	3088 (91%)	282 (8%)	9 (0%)	44	72

All (9) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
4	D	152	PRO
4	D	153	GLY
22	V	90	GLY
31	e	32	ILE
9	I	68	PRO
19	S	52	PRO
7	G	48	ASN
9	I	106	PHE
3	C	241	GLY

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	
3	C	216/218 (99%)	215 (100%)	1 (0%)	88	95
4	D	164/164 (100%)	164 (100%)	0	100	100
5	E	165/165 (100%)	165 (100%)	0	100	100
6	F	148/150 (99%)	147 (99%)	1 (1%)	84	93
7	G	137/138 (99%)	137 (100%)	0	100	100
8	H	113/114 (99%)	112 (99%)	1 (1%)	78	90
9	I	103/123 (84%)	103 (100%)	0	100	100
10	J	53/110 (48%)	53 (100%)	0	100	100
11	K	116/116 (100%)	116 (100%)	0	100	100
12	L	104/104 (100%)	104 (100%)	0	100	100
13	M	103/103 (100%)	103 (100%)	0	100	100
14	N	110/109 (101%)	110 (100%)	0	100	100
15	O	102/103 (99%)	102 (100%)	0	100	100
16	P	87/87 (100%)	87 (100%)	0	100	100
17	Q	99/100 (99%)	99 (100%)	0	100	100
18	R	89/90 (99%)	89 (100%)	0	100	100
19	S	84/84 (100%)	83 (99%)	1 (1%)	71	87
20	T	93/93 (100%)	93 (100%)	0	100	100
21	U	80/84 (95%)	80 (100%)	0	100	100
22	V	83/85 (98%)	83 (100%)	0	100	100
23	W	78/78 (100%)	78 (100%)	0	100	100
24	X	58/63 (92%)	58 (100%)	0	100	100
25	Y	67/68 (98%)	67 (100%)	0	100	100
26	Z	54/55 (98%)	54 (100%)	0	100	100
27	a	49/49 (100%)	49 (100%)	0	100	100
28	b	47/48 (98%)	47 (100%)	0	100	100
29	c	45/49 (92%)	45 (100%)	0	100	100
30	d	38/38 (100%)	38 (100%)	0	100	100
31	e	51/52 (98%)	50 (98%)	1 (2%)	55	79
32	f	34/34 (100%)	34 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
All	All	2770/2874 (96%)	2765 (100%)	5 (0%)	93 97

All (5) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
3	C	103	TYR
6	F	89	VAL
8	H	97	ARG
19	S	51	VAL
31	e	32	ILE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (28) such sidechains are listed below:

Mol	Chain	Res	Type
3	C	37	ASN
3	C	53	HIS
3	C	86	ASN
3	C	251	GLN
4	D	140	HIS
5	E	41	GLN
7	G	22	GLN
7	G	45	HIS
7	G	104	ASN
7	G	111	HIS
7	G	116	GLN
9	I	9	GLN
11	K	132	HIS
12	L	3	GLN
15	O	31	HIS
16	P	38	GLN
17	Q	56	HIS
18	R	20	GLN
18	R	37	GLN
18	R	56	GLN
18	R	72	ASN
20	T	7	HIS
21	U	70	HIS
22	V	27	ASN
22	V	69	ASN
27	a	9	GLN
28	b	5	GLN

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Mol	Chain	Res	Type
30	d	29	GLN

5.3.3 RNA [i](#)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	A	2892/2903 (99%)	544 (18%)	15 (0%)
2	B	119/120 (99%)	11 (9%)	0
All	All	3011/3023 (99%)	555 (18%)	15 (0%)

All (555) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	A	10	A
1	A	15	G
1	A	23	G
1	A	34	U
1	A	35	G
1	A	36	G
1	A	39	G
1	A	45	G
1	A	46	G
1	A	58	G
1	A	63	A
1	A	71	A
1	A	72	U
1	A	74	A
1	A	75	G
1	A	84	A
1	A	101	A
1	A	102	U
1	A	118	A
1	A	120	U
1	A	139	U
1	A	140	C
1	A	142	A
1	A	159	G
1	A	162	U
1	A	163	C
1	A	165	A
1	A	181	A
1	A	196	A

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Mol	Chain	Res	Type
1	A	199	A
1	A	200	U
1	A	201	C
1	A	204	A
1	A	216	A
1	A	221	A
1	A	222	A
1	A	223	A
1	A	233	A
1	A	248	G
1	A	265	A
1	A	266	G
1	A	267	C
1	A	272	A
1	A	274	C
1	A	275	C
1	A	276	U
1	A	278	A
1	A	286	U
1	A	287	G
1	A	289	G
1	A	290	U
1	A	294	A
1	A	302	C
1	A	311	A
1	A	329	G
1	A	330	A
1	A	353	C
1	A	361	G
1	A	362	A
1	A	372	G
1	A	385	C
1	A	386	G
1	A	396	G
1	A	399	U
1	A	403	U
1	A	405	U
1	A	406	G
1	A	411	G
1	A	412	A
1	A	424	G
1	A	429	A

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Mol	Chain	Res	Type
1	A	452	G
1	A	456	C
1	A	457	A
1	A	464	U
1	A	473	G
1	A	481	G
1	A	489	G
1	A	490	C
1	A	491	G
1	A	505	A
1	A	509	C
1	A	528	A
1	A	529	A
1	A	530	G
1	A	532	A
1	A	533	G
1	A	544	C
1	A	546	U
1	A	547	A
1	A	548	G
1	A	549	G
1	A	550	C
1	A	563	A
1	A	569	U
1	A	573	U
1	A	575	A
1	A	584	C
1	A	603	A
1	A	613	A
1	A	614	A
1	A	615	U
1	A	620	G
1	A	627	A
1	A	637	A
1	A	645	C
1	A	653	U
1	A	654	A
1	A	655	A
1	A	685	A
1	A	686	U
1	A	687	C
1	A	699	A

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Mol	Chain	Res	Type
1	A	711	G
1	A	713	G
1	A	717	C
1	A	718	A
1	A	721	A
1	A	730	A
1	A	738	G
1	A	747	U
1	A	748	G
1	A	749	A
1	A	764	A
1	A	765	C
1	A	775	G
1	A	776	G
1	A	782	A
1	A	784	G
1	A	785	G
1	A	791	C
1	A	792	A
1	A	805	G
1	A	812	C
1	A	819	A
1	A	827	U
1	A	828	U
1	A	829	A
1	A	844	A
1	A	845	A
1	A	846	U
1	A	857	G
1	A	859	G
1	A	866	A
1	A	869	G
1	A	877	A
1	A	878	A
1	A	879	G
1	A	880	G
1	A	882	G
1	A	883	G
1	A	884	U
1	A	885	C
1	A	894	U
1	A	896	A

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Mol	Chain	Res	Type
1	A	901	C
1	A	907	G
1	A	910	A
1	A	915	C
1	A	919	U
1	A	931	U
1	A	946	C
1	A	947	A
1	A	953	G
1	A	959	A
1	A	961	C
1	A	973	A
1	A	974	G
1	A	980	A
1	A	983	A
1	A	989	G
1	A	990	A
1	A	996	A
1	A	1012	U
1	A	1013	C
1	A	1025	G
1	A	1026	G
1	A	1033	U
1	A	1047	G
1	A	1057	A
1	A	1060	U
1	A	1061	U
1	A	1062	G
1	A	1064	C
1	A	1065	U
1	A	1069	A
1	A	1070	A
1	A	1071	G
1	A	1074	G
1	A	1075	C
1	A	1076	C
1	A	1077	A
1	A	1078	U
1	A	1079	C
1	A	1084	A
1	A	1085	A
1	A	1087	G

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Mol	Chain	Res	Type
1	A	1088	A
1	A	1090	A
1	A	1097	U
1	A	1098	A
1	A	1102	C
1	A	1105	U
1	A	1106	G
1	A	1110	G
1	A	1111	A
1	A	1112	G
1	A	1116	G
1	A	1132	U
1	A	1133	A
1	A	1134	A
1	A	1135	C
1	A	1142	A
1	A	1156	A
1	A	1172	C
1	A	1173	U
1	A	1174	U
1	A	1175	A
1	A	1176	U
1	A	1177	G
1	A	1178	C
1	A	1180	U
1	A	1204	A
1	A	1205	A
1	A	1212	G
1	A	1218	G
1	A	1238	G
1	A	1241	A
1	A	1250	G
1	A	1253	A
1	A	1256	G
1	A	1263	U
1	A	1265	A
1	A	1268	A
1	A	1271	G
1	A	1272	A
1	A	1273	U
1	A	1275	A
1	A	1300	G

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Mol	Chain	Res	Type
1	A	1301	A
1	A	1325	U
1	A	1329	U
1	A	1344	U
1	A	1345	C
1	A	1347	A
1	A	1352	U
1	A	1365	A
1	A	1378	A
1	A	1379	U
1	A	1383	A
1	A	1403	A
1	A	1416	G
1	A	1417	C
1	A	1419	A
1	A	1421	G
1	A	1427	A
1	A	1428	C
1	A	1435	G
1	A	1437	C
1	A	1452	G
1	A	1482	G
1	A	1490	A
1	A	1493	C
1	A	1494	A
1	A	1495	A
1	A	1497	U
1	A	1505	A
1	A	1507	C
1	A	1508	A
1	A	1509	A
1	A	1510	G
1	A	1515	A
1	A	1522	A
1	A	1524	G
1	A	1529	G
1	A	1532	A
1	A	1533	C
1	A	1534	U
1	A	1536	C
1	A	1537	G
1	A	1538	G

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Mol	Chain	Res	Type
1	A	1539	U
1	A	1540	G
1	A	1558	C
1	A	1567	G
1	A	1569	A
1	A	1578	U
1	A	1584	U
1	A	1585	C
1	A	1608	A
1	A	1609	A
1	A	1613	G
1	A	1634	A
1	A	1647	U
1	A	1648	U
1	A	1654	A
1	A	1665	A
1	A	1674	G
1	A	1698	A
1	A	1713	A
1	A	1715	G
1	A	1725	U
1	A	1729	U
1	A	1730	C
1	A	1732	C
1	A	1733	G
1	A	1738	G
1	A	1755	A
1	A	1764	C
1	A	1773	A
1	A	1784	A
1	A	1800	C
1	A	1801	A
1	A	1808	A
1	A	1809	A
1	A	1816	C
1	A	1829	A
1	A	1847	A
1	A	1866	A
1	A	1870	C
1	A	1871	A
1	A	1872	A
1	A	1873	G

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Mol	Chain	Res	Type
1	A	1876	A
1	A	1890	A
1	A	1906	G
1	A	1907	G
1	A	1910	G
1	A	1914	C
1	A	1922	G
1	A	1927	A
1	A	1929	G
1	A	1930	G
1	A	1936	A
1	A	1937	A
1	A	1938	A
1	A	1939	U
1	A	1955	U
1	A	1963	U
1	A	1966	A
1	A	1967	C
1	A	1970	A
1	A	1971	U
1	A	1972	G
1	A	1991	U
1	A	1993	U
1	A	1997	C
1	A	2020	A
1	A	2023	C
1	A	2026	U
1	A	2030	A
1	A	2031	A
1	A	2033	A
1	A	2043	C
1	A	2049	G
1	A	2052	A
1	A	2055	C
1	A	2056	G
1	A	2059	A
1	A	2060	A
1	A	2061	G
1	A	2062	A
1	A	2069	G
1	A	2077	A
1	A	2092	U

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Mol	Chain	Res	Type
1	A	2093	G
1	A	2100	G
1	A	2102	G
1	A	2105	U
1	A	2107	G
1	A	2108	A
1	A	2110	G
1	A	2111	U
1	A	2112	G
1	A	2113	U
1	A	2115	G
1	A	2117	A
1	A	2118	U
1	A	2119	A
1	A	2120	G
1	A	2123	G
1	A	2125	G
1	A	2127	G
1	A	2128	G
1	A	2130	U
1	A	2131	U
1	A	2132	U
1	A	2133	G
1	A	2135	A
1	A	2137	U
1	A	2138	G
1	A	2143	C
1	A	2145	C
1	A	2146	C
1	A	2148	G
1	A	2149	U
1	A	2151	U
1	A	2152	G
1	A	2159	G
1	A	2161	C
1	A	2163	A
1	A	2164	C
1	A	2165	C
1	A	2167	U
1	A	2168	G
1	A	2169	A
1	A	2170	A

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Mol	Chain	Res	Type
1	A	2171	A
1	A	2172	U
1	A	2175	C
1	A	2176	A
1	A	2177	C
1	A	2178	C
1	A	2180	U
1	A	2181	U
1	A	2184	A
1	A	2186	G
1	A	2187	U
1	A	2189	U
1	A	2190	G
1	A	2191	A
1	A	2192	U
1	A	2193	G
1	A	2198	A
1	A	2203	U
1	A	2204	G
1	A	2211	A
1	A	2212	A
1	A	2214	C
1	A	2225	A
1	A	2238	G
1	A	2239	G
1	A	2249	U
1	A	2266	A
1	A	2273	A
1	A	2279	G
1	A	2283	C
1	A	2287	A
1	A	2288	A
1	A	2297	A
1	A	2305	U
1	A	2307	G
1	A	2308	G
1	A	2311	A
1	A	2312	U
1	A	2321	U
1	A	2325	G
1	A	2334	U
1	A	2336	A

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Mol	Chain	Res	Type
1	A	2345	G
1	A	2347	C
1	A	2350	C
1	A	2361	G
1	A	2366	A
1	A	2377	A
1	A	2383	G
1	A	2385	C
1	A	2396	G
1	A	2402	U
1	A	2406	A
1	A	2422	C
1	A	2425	A
1	A	2426	A
1	A	2427	C
1	A	2428	G
1	A	2431	U
1	A	2435	A
1	A	2441	U
1	A	2445	G
1	A	2448	A
1	A	2449	U
1	A	2464	G
1	A	2473	U
1	A	2474	U
1	A	2476	A
1	A	2491	U
1	A	2498	C
1	A	2502	G
1	A	2503	A
1	A	2504	U
1	A	2505	G
1	A	2506	U
1	A	2507	C
1	A	2508	G
1	A	2513	A
1	A	2518	A
1	A	2520	C
1	A	2529	G
1	A	2535	G
1	A	2547	A
1	A	2552	U

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Mol	Chain	Res	Type
1	A	2553	G
1	A	2564	A
1	A	2566	A
1	A	2567	G
1	A	2572	A
1	A	2573	C
1	A	2574	G
1	A	2581	G
1	A	2582	G
1	A	2584	U
1	A	2602	A
1	A	2603	G
1	A	2609	U
1	A	2610	C
1	A	2611	C
1	A	2613	U
1	A	2615	U
1	A	2629	U
1	A	2630	G
1	A	2660	A
1	A	2663	G
1	A	2684	U
1	A	2689	U
1	A	2690	U
1	A	2703	C
1	A	2714	G
1	A	2718	G
1	A	2720	U
1	A	2726	A
1	A	2727	A
1	A	2732	G
1	A	2733	A
1	A	2744	G
1	A	2748	A
1	A	2767	C
1	A	2778	A
1	A	2779	U
1	A	2791	G
1	A	2792	A
1	A	2799	A
1	A	2805	C
1	A	2820	A

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Mol	Chain	Res	Type
1	A	2825	G
1	A	2835	A
1	A	2836	U
1	A	2861	U
1	A	2867	G
1	A	2873	A
1	A	2880	C
1	A	2883	A
1	A	2885	G
1	A	2886	A
1	A	2903	U
2	B	13	G
2	B	21	G
2	B	24	G
2	B	30	C
2	B	35	C
2	B	40	U
2	B	41	G
2	B	66	A
2	B	89	U
2	B	108	A
2	B	109	A

All (15) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
1	A	712	G
1	A	1061	U
1	A	1240	U
1	A	1494	A
1	A	1533	C
1	A	1538	G
1	A	2030	A
1	A	2109	U
1	A	2127	G
1	A	2148	G
1	A	2158	A
1	A	2168	G
1	A	2177	C
1	A	2191	A
1	A	2610	C

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](#)

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.

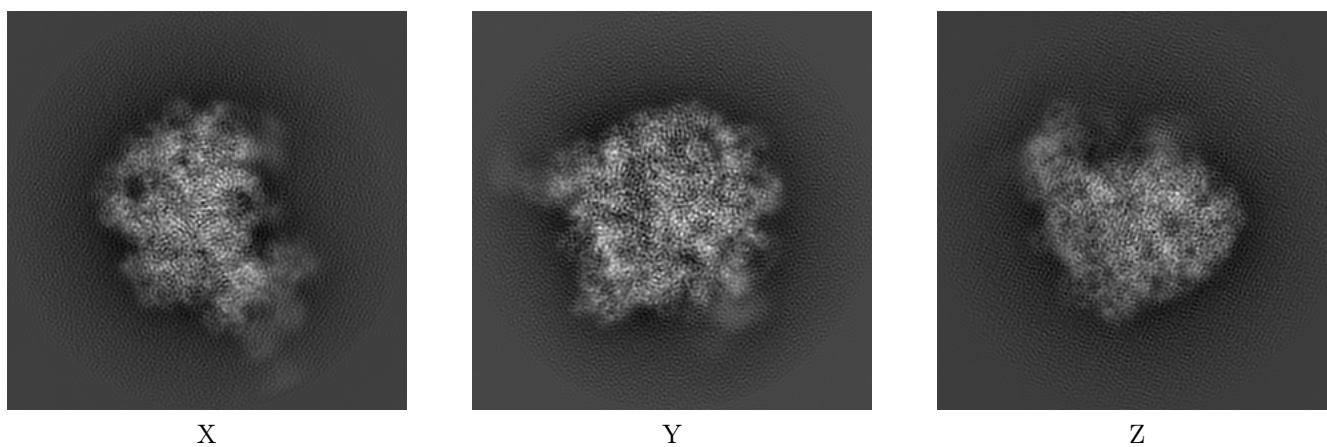
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-30215. 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 [i](#)

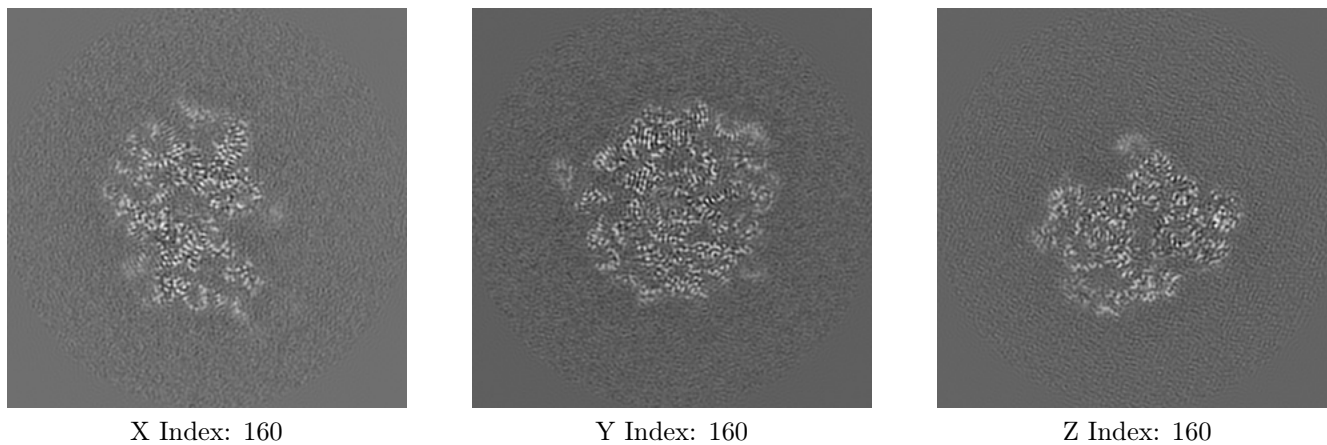
6.1.1 Primary map



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

6.2 Central slices [i](#)

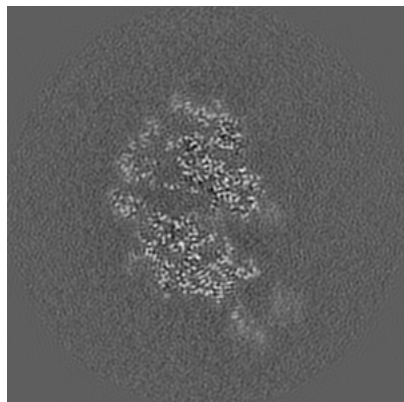
6.2.1 Primary map



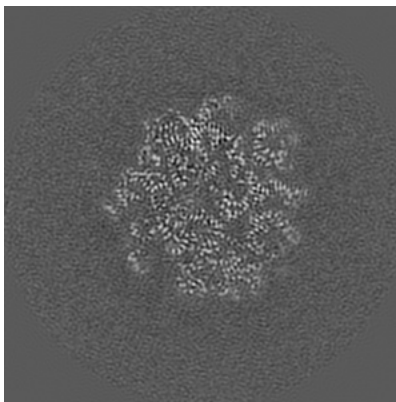
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

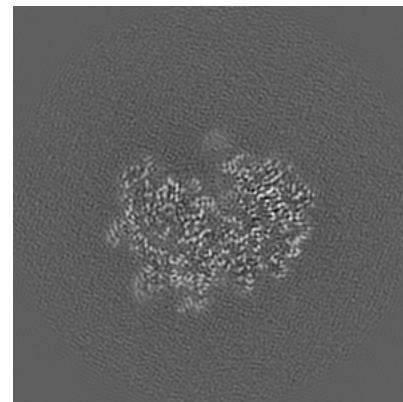
6.3.1 Primary map



X Index: 167



Y Index: 154

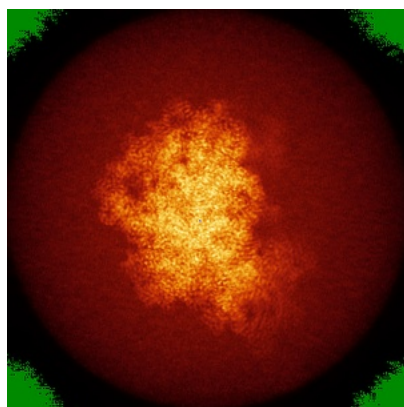


Z Index: 149

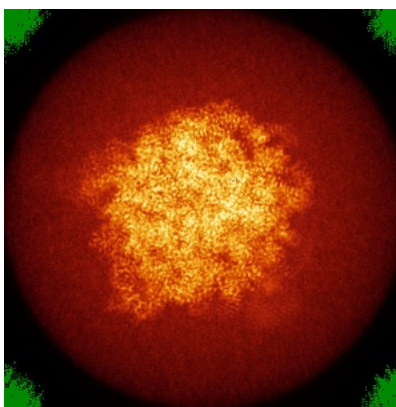
The images above show the largest variance slices of the map in three orthogonal directions.

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

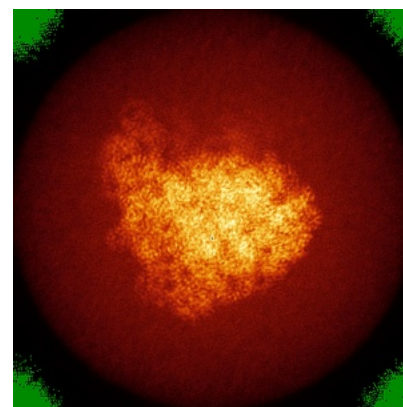
6.4.1 Primary map



X



Y

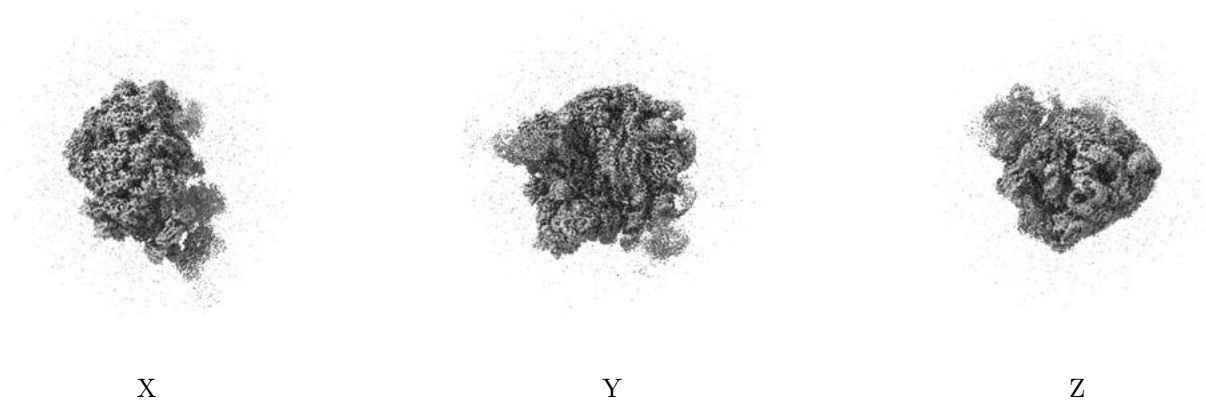


Z

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



The images above show the 3D surface view of the map at the recommended contour level 0.11. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

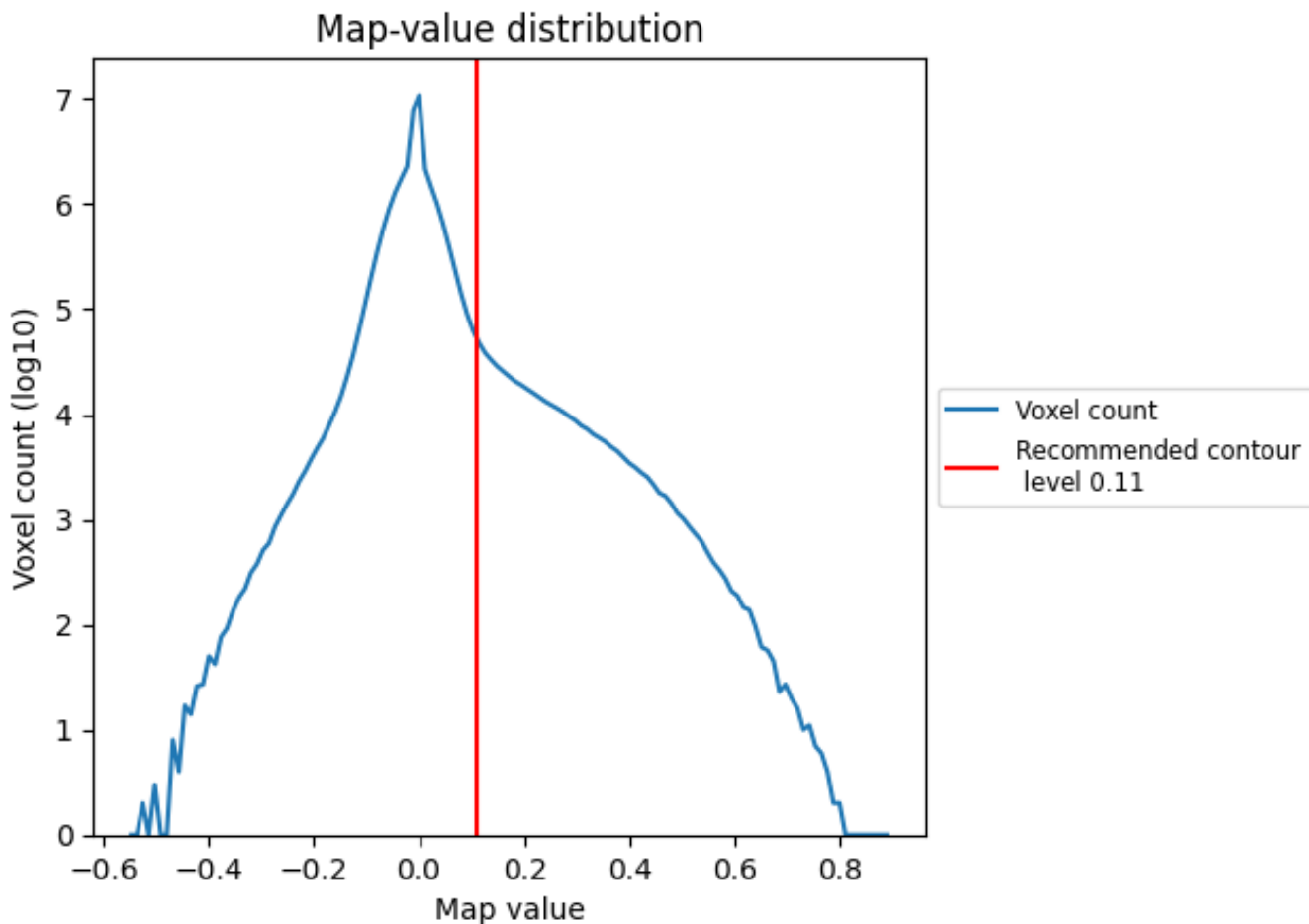
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

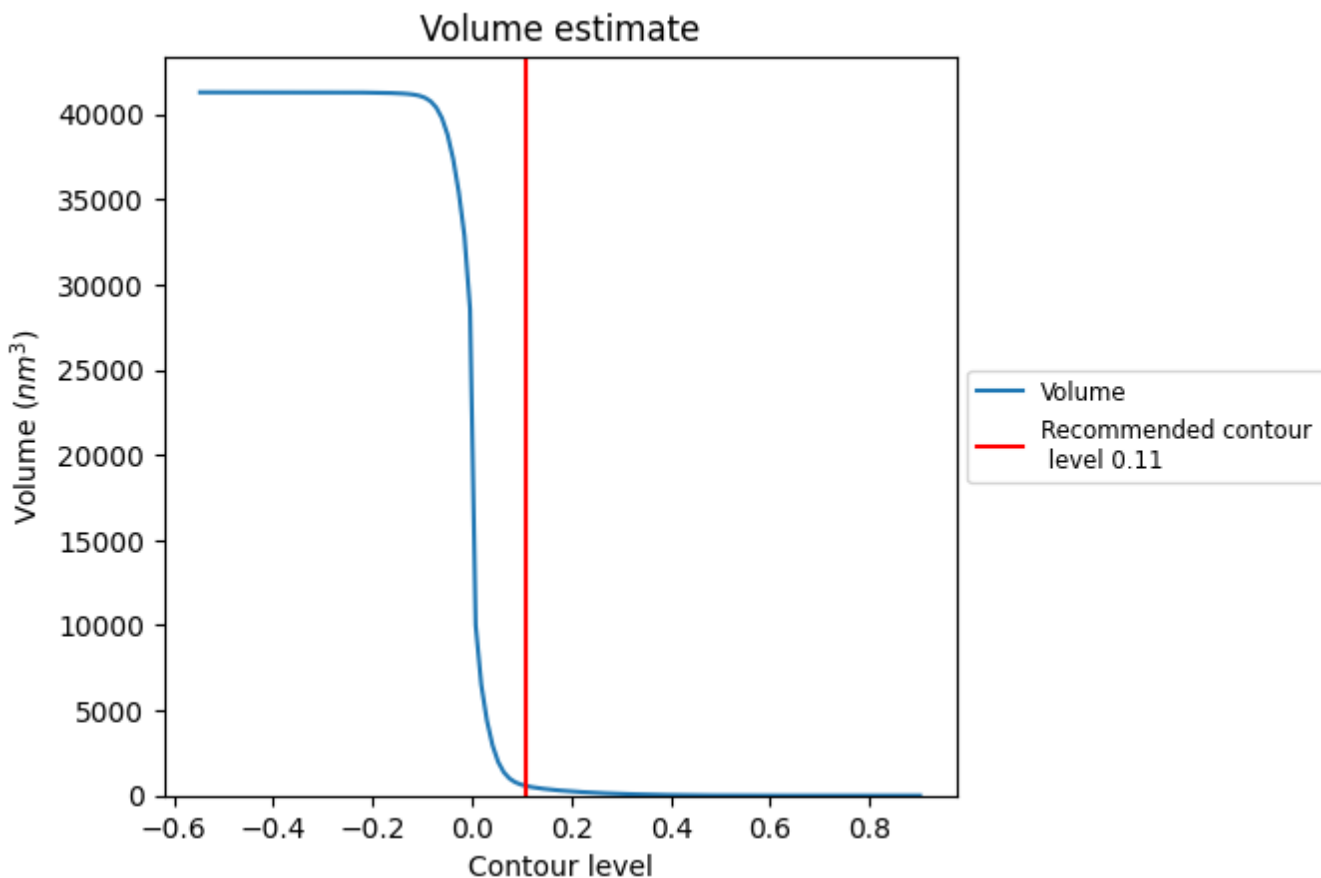
This section contains the results of statistical analysis of the map.

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.

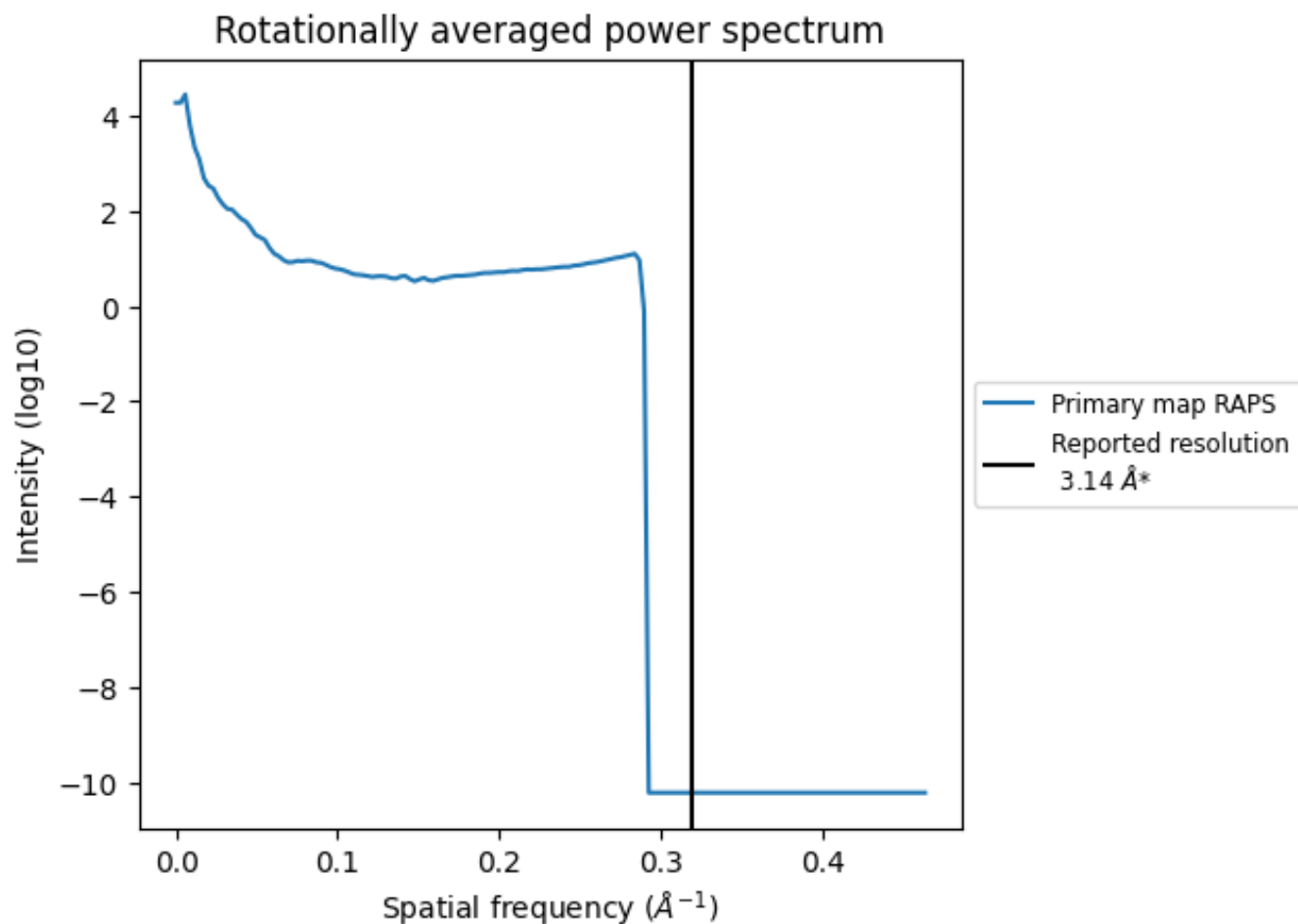
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 558 nm³; this corresponds to an approximate mass of 504 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 0.318\AA^{-1}

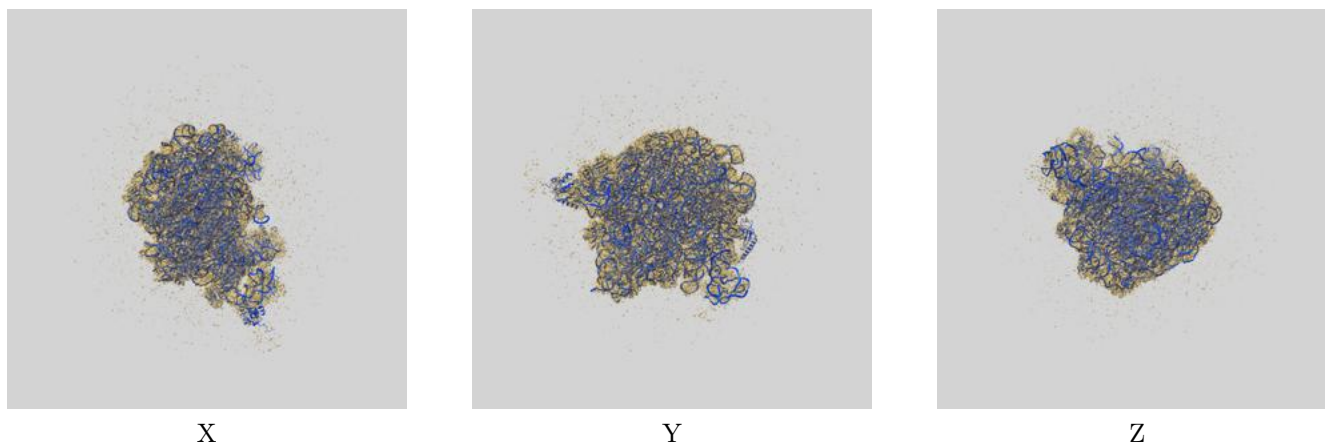
8 Fourier-Shell correlation

This section was not generated. No FSC curve or half-maps provided.

9 Map-model fit [i](#)

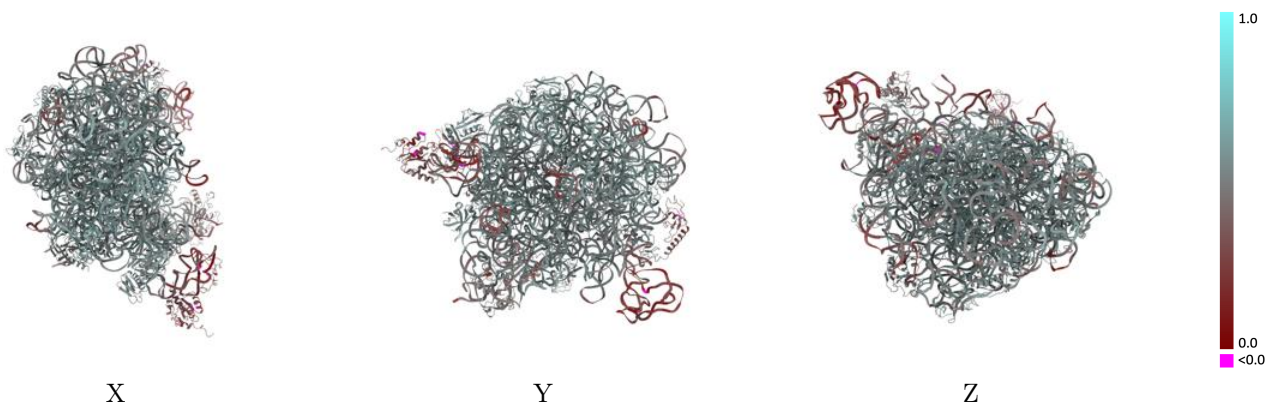
This section contains information regarding the fit between EMDB map EMD-30215 and PDB model 7BV8. Per-residue inclusion information can be found in section [3](#) on page [9](#).

9.1 Map-model overlay [i](#)



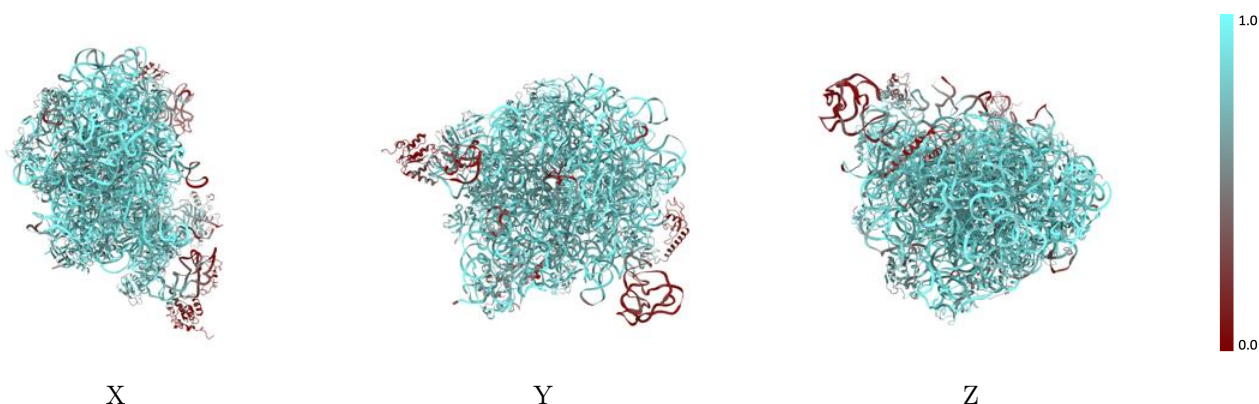
The images above show the 3D surface view of the map at the recommended contour level 0.11 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



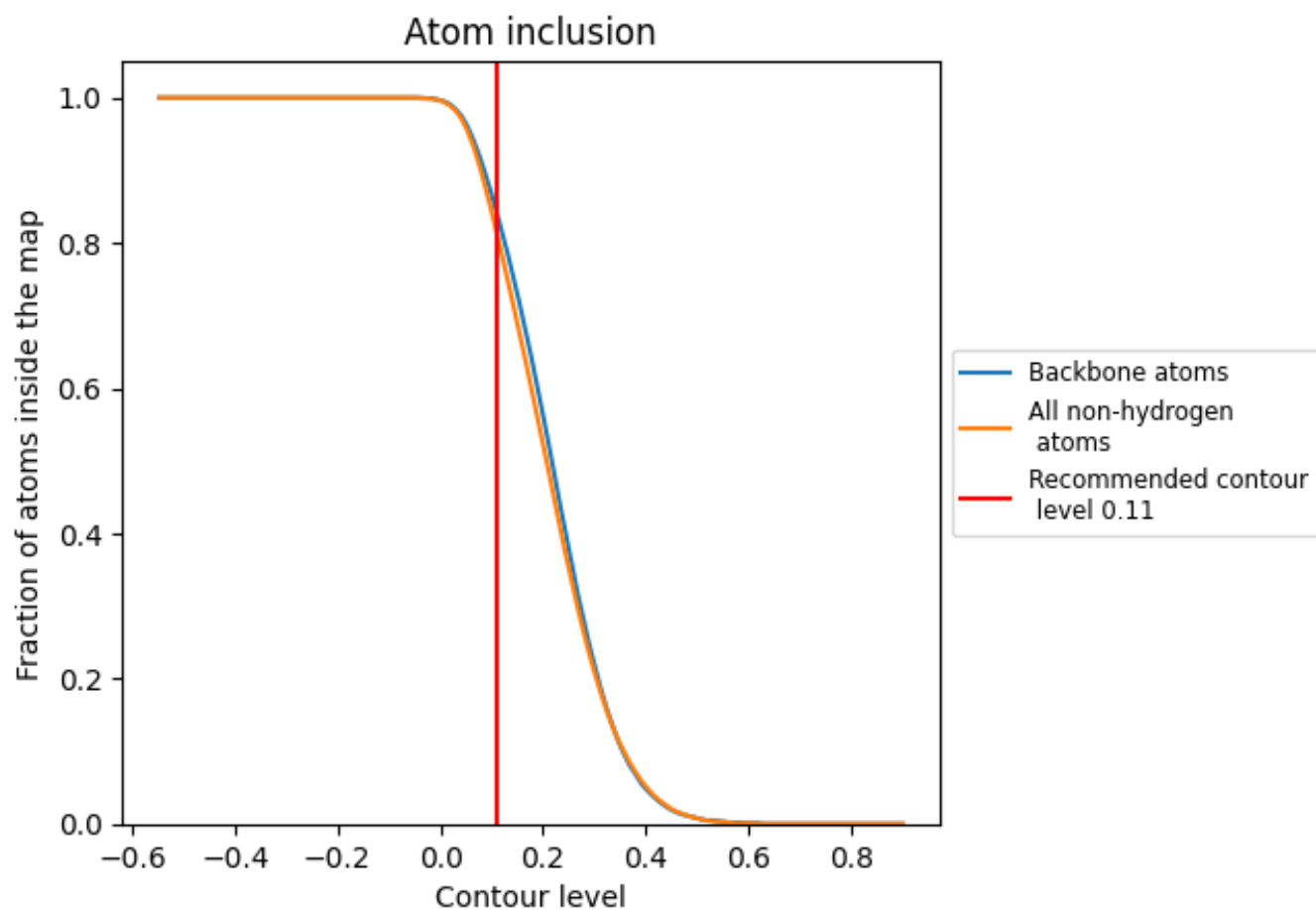
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.11).



































































9.4 Atom inclusion [i](#)



At the recommended contour level, 84% of all backbone atoms, 81% 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 (0.11) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.8140	 0.5100
A	 0.8530	 0.5060
B	 0.8600	 0.4860
C	 0.8630	 0.5690
D	 0.8300	 0.5630
E	 0.7100	 0.5210
F	 0.5360	 0.4420
G	 0.7300	 0.5250
H	 0.3090	 0.4060
I	 0.1680	 0.3080
J	 0.1670	 0.2600
K	 0.8150	 0.5640
L	 0.8300	 0.5640
M	 0.7710	 0.5500
N	 0.7800	 0.5580
O	 0.8180	 0.5580
P	 0.7460	 0.5150
Q	 0.7770	 0.5490
R	 0.8230	 0.5610
S	 0.8020	 0.5550
T	 0.7890	 0.5580
U	 0.7260	 0.5360
V	 0.7330	 0.5260
W	 0.7670	 0.5480
X	 0.8010	 0.5610
Y	 0.7940	 0.5560
Z	 0.6990	 0.5270
a	 0.7640	 0.5580
b	 0.8220	 0.5640
c	 0.6870	 0.5280
d	 0.8030	 0.5770
e	 0.8270	 0.5700
f	 0.7910	 0.5690

