Full wwPDB EM Validation Report

Sep 13, 2023 – 12:45 pm BST

PDB ID	:	8CAZ
EMDB ID	:	EMD-16536
Title	:	empty 30S head
Authors	:	Paternoga, H.; Beckert, B.; Wilson, D.N.
Deposited on	:	2023-01-24
Resolution	:	2.11 Å(reported)

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

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

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

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

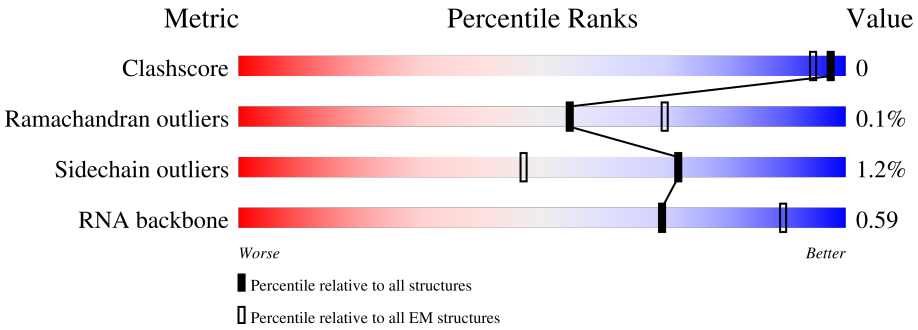
EMDB validation analysis	:	0.0.1.dev50
Mogul	:	1.8.4, CSD as541be (2020)
MolProbity	:	4.02b-467
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ	:	1.9.9
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.35.1

1 Overall quality at a glance (i)

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

The reported resolution of this entry is 2.11 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	158937	4297
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826
RNA backbone	4643	859

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

Mol	Chain	Length	Quality of chain
1	4	70	14% 14% 83%
2	A	1540	24% 6% 70%
3	B	241	74% 87% 11%
4	C	233	85% 13%
5	G	179	12% 78% 20%
6	I	130	5% 95%
7	J	103	26% 91% 5%

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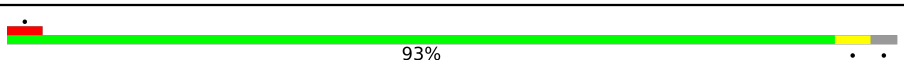
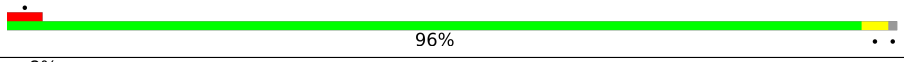
Mol	Chain	Length	Quality of chain
8	M	118	
9	N	101	
10	S	92	

2 Entry composition (i)

There are 13 unique types of molecules in this entry. The entry contains 19193 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 Large ribosomal subunit protein bL31A.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
1	4	12	107	67	24	16	0	0

- Molecule 2 is a RNA chain called 16S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
2	A	460	9841	4394	1786	3201	460	0	0

- Molecule 3 is a protein called 30S ribosomal protein S2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	B	214	1685	1069	301	307	8	0	0

- Molecule 4 is a protein called Small ribosomal subunit protein uS3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	C	202	1597	1011	300	283	3	0	0

- Molecule 5 is a protein called 30S ribosomal protein S7.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	G	144	1136	710	216	206	4	0	0

- Molecule 6 is a protein called Small ribosomal subunit protein uS9.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	I	127	1022	634	206	179	3	0	0

- Molecule 7 is a protein called Small ribosomal subunit protein uS10.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	J	98	Total	C	N	O	S	0	0
			786	493	150	142	1		

- Molecule 8 is a protein called Small ribosomal subunit protein uS13.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	M	115	Total	C	N	O	S	0	0
			891	552	179	157	3		

- Molecule 9 is a protein called Small ribosomal subunit protein uS14.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	N	100	Total	C	N	O	S	0	0
			805	499	164	139	3		

- Molecule 10 is a protein called Small ribosomal subunit protein uS19.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	S	83	Total	C	N	O	S	0	0
			663	424	126	111	2		

- Molecule 11 is POTASSIUM ION (three-letter code: K) (formula: K).

Mol	Chain	Residues	Atoms		AltConf
11	A	12	Total	K	0
			12	12	
11	M	1	Total	K	0
			1	1	

- Molecule 12 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		AltConf
12	A	29	Total	Mg	0
			29	29	

- Molecule 13 is water.

Mol	Chain	Residues	Atoms		AltConf
13	4	1	Total	O	0
			1	1	

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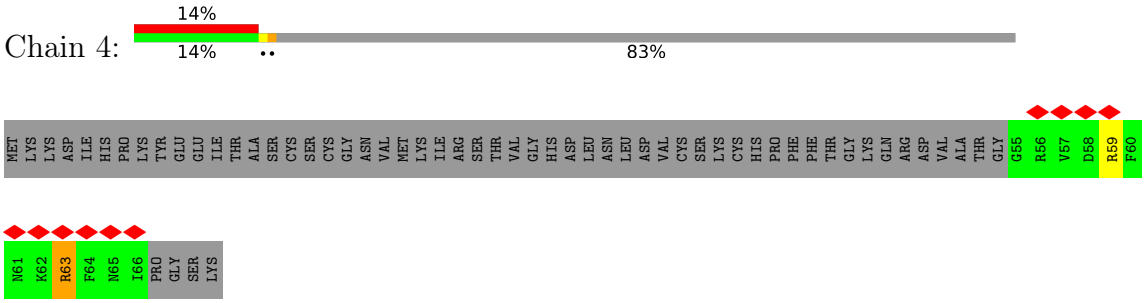
Mol	Chain	Residues	Atoms	AltConf
13	A	503	Total O 503 503	0
13	C	18	Total O 18 18	0
13	G	6	Total O 6 6	0
13	I	15	Total O 15 15	0
13	J	17	Total O 17 17	0
13	M	14	Total O 14 14	0
13	N	33	Total O 33 33	0
13	S	11	Total O 11 11	0

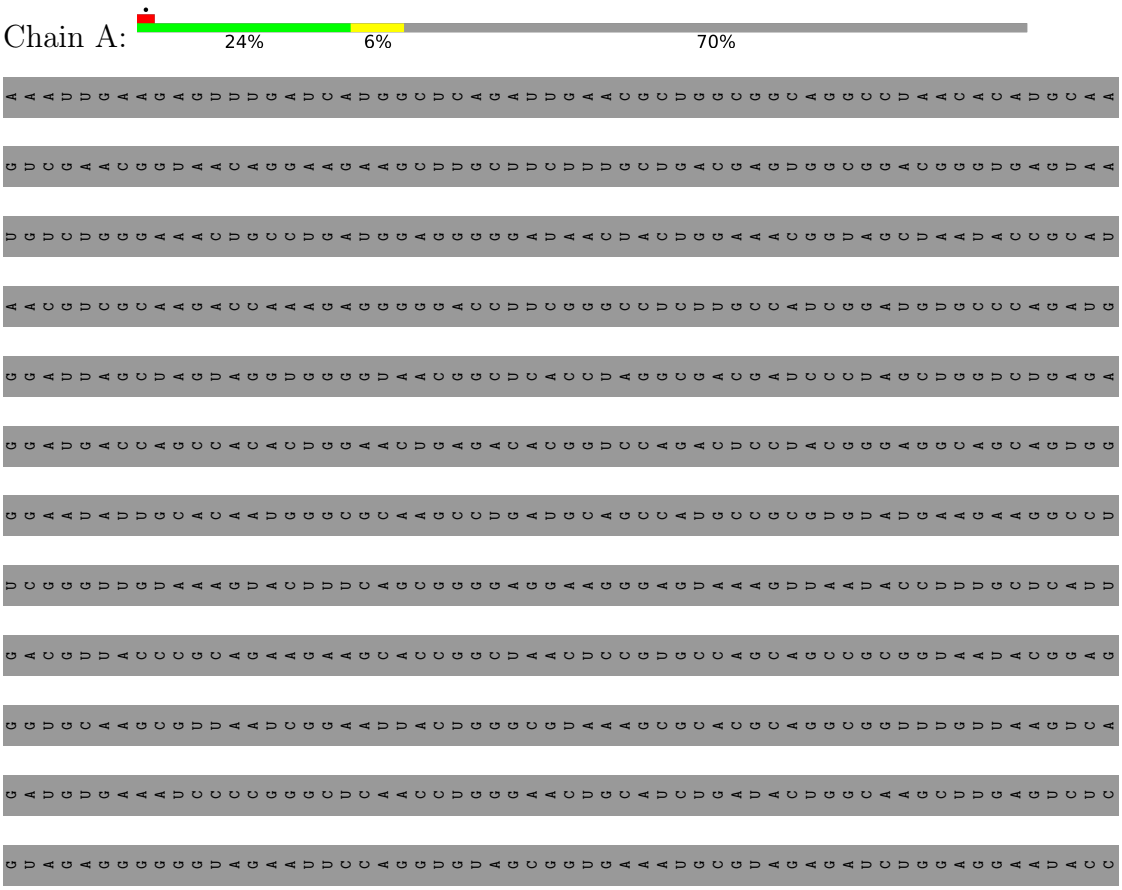
3 Residue-property plots (i)

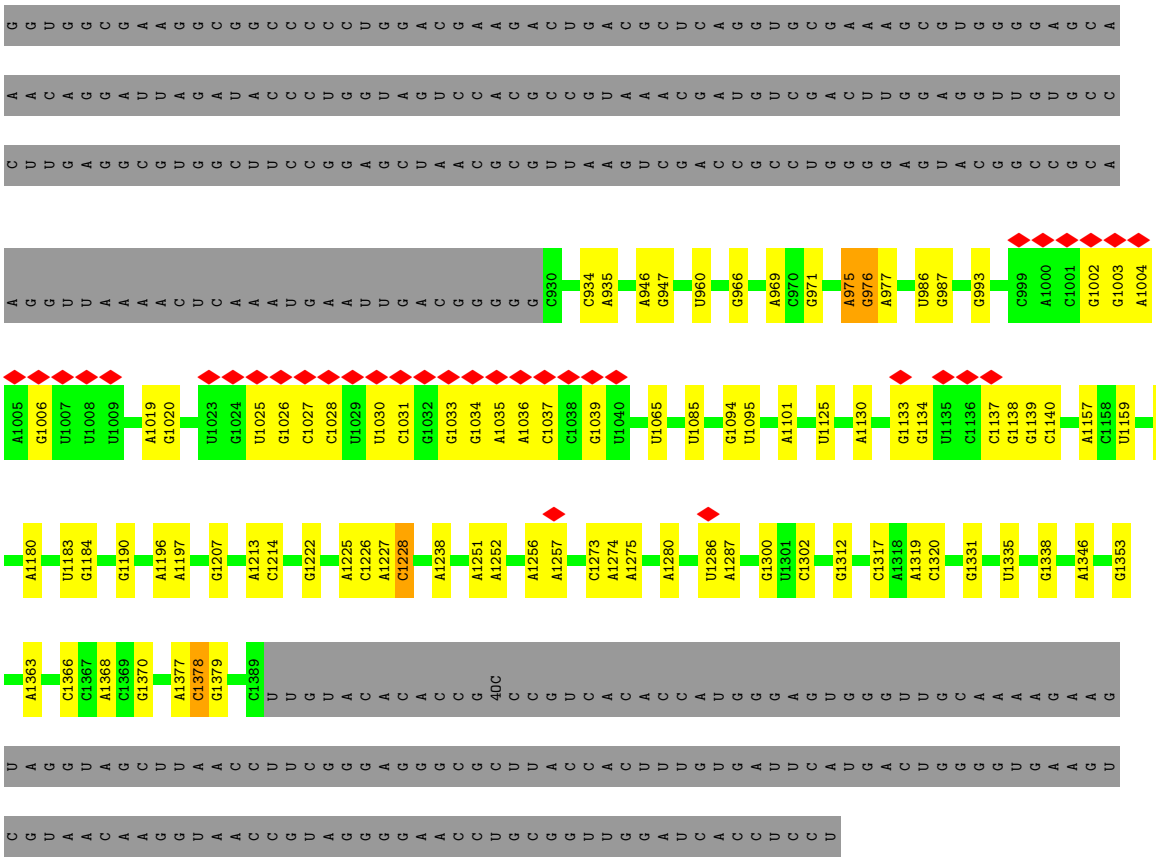
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion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

• Molecule 1: Large ribosomal subunit protein bL31A



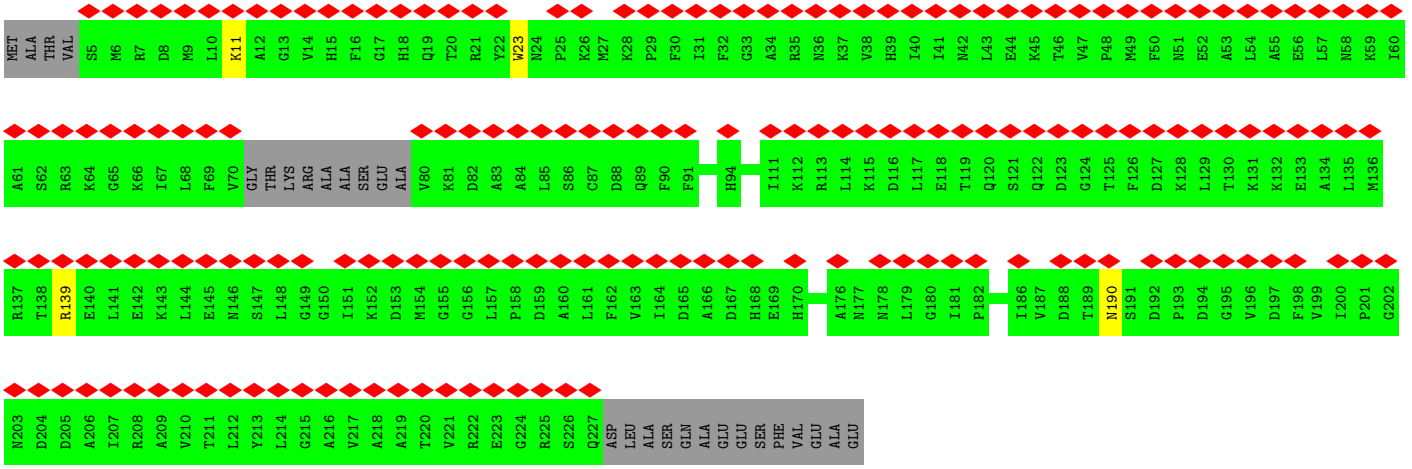
• Molecule 2: 16S rRNA





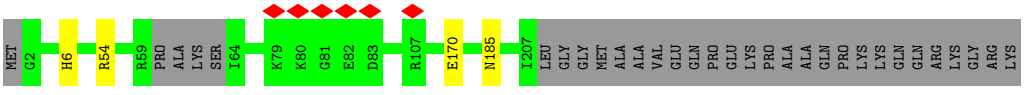
• Molecule 3: 30S ribosomal protein S2

Chain B:



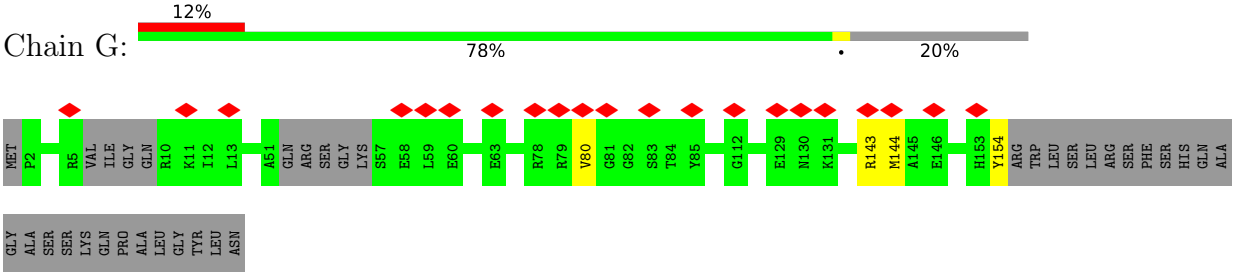
• Molecule 4: Small ribosomal subunit protein uS3

Chain C:



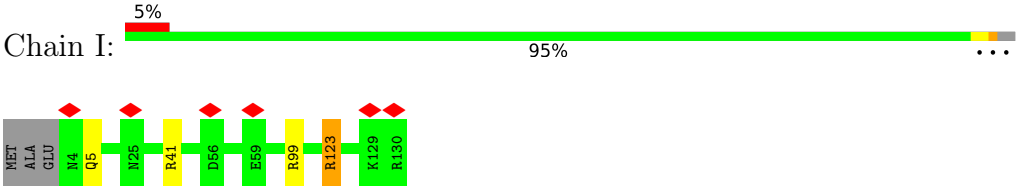
• Molecule 5: 30S ribosomal protein S7

Chain G:



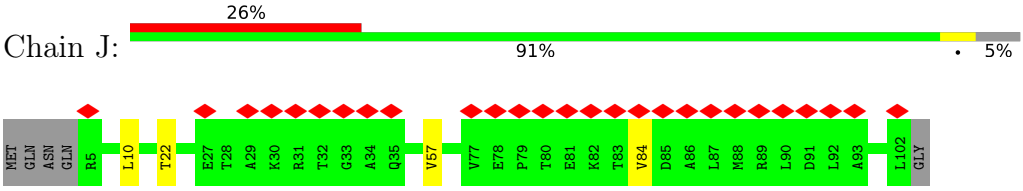
• Molecule 6: Small ribosomal subunit protein uS9

Chain I:



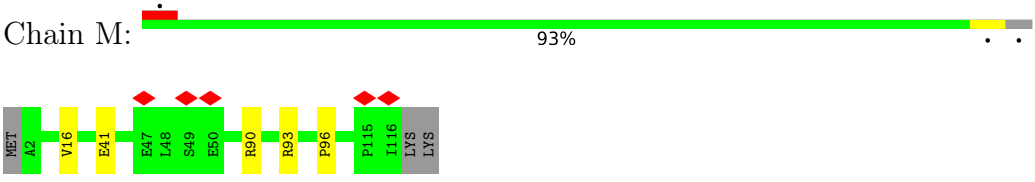
• Molecule 7: Small ribosomal subunit protein uS10

Chain J:



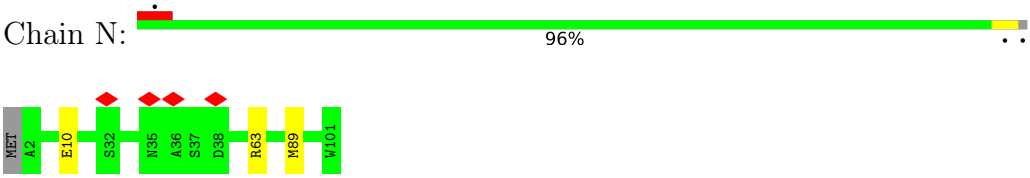
• Molecule 8: Small ribosomal subunit protein uS13

Chain M:



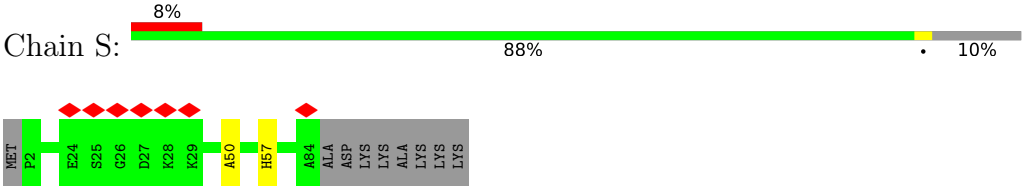
• Molecule 9: Small ribosomal subunit protein uS14

Chain N:



• Molecule 10: Small ribosomal subunit protein uS19

Chain S:



4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	179724	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	60	Depositor
Minimum defocus (nm)	400	Depositor
Maximum defocus (nm)	1000	Depositor
Magnification	Not provided	
Image detector	FEI FALCON IV (4k x 4k)	Depositor
Maximum map value	0.084	Depositor
Minimum map value	-0.027	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.001	Depositor
Recommended contour level	0.0111	Depositor
Map size (Å)	518.4, 518.4, 518.4	wwPDB
Map dimensions	720, 720, 720	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.72, 0.72, 0.72	Depositor

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: 2MG, MG, 5MC, K

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	4	0.34	0/108	0.65	0/141
2	A	0.49	0/10934	1.15	7/17047 (0.0%)
3	B	0.31	0/1715	0.64	0/2309
4	C	0.29	0/1622	0.63	0/2184
5	G	0.31	0/1150	0.67	0/1541
6	I	0.31	0/1034	0.69	0/1375
7	J	0.27	0/796	0.72	0/1077
8	M	0.30	0/900	0.70	0/1204
9	N	0.32	0/817	0.64	0/1088
10	S	0.32	0/680	0.65	0/915
All	All	0.42	0/19756	0.98	7/28881 (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
1	4	0	2
4	C	0	1
5	G	0	1
6	I	0	2
8	M	0	1
All	All	0	7

There are no bond length outliers.

All (7) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	A	1228	C	O5'-P-OP2	-7.85	98.63	105.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	A	1331	G	O4'-C1'-N9	6.98	113.78	108.20
2	A	976	G	O3'-P-O5'	-6.30	92.03	104.00
2	A	1190	G	O3'-P-O5'	-5.57	93.42	104.00
2	A	1377	A	O3'-P-O5'	-5.34	93.85	104.00
2	A	1222	G	O5'-P-OP2	-5.20	101.02	105.70
2	A	1378	C	O5'-P-OP2	5.17	116.90	110.70

There are no chirality outliers.

All (7) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	4	59	ARG	Sidechain
1	4	63	ARG	Sidechain
4	C	54	ARG	Sidechain
5	G	143	ARG	Sidechain
6	I	123	ARG	Sidechain
6	I	41	ARG	Sidechain
8	M	93	ARG	Sidechain

5.2 Too-close contacts (i)

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	4	107	0	108	1	0
2	A	9841	0	4966	9	0
3	B	1685	0	1708	0	0
4	C	1597	0	1665	1	0
5	G	1136	0	1179	0	0
6	I	1022	0	1070	2	0
7	J	786	0	828	1	0
8	M	891	0	952	3	0
9	N	805	0	844	2	0
10	S	663	0	688	1	0
11	A	12	0	0	0	0
11	M	1	0	0	0	0
12	A	29	0	0	0	0
13	4	1	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
13	A	503	0	0	0	0
13	C	18	0	0	0	0
13	G	6	0	0	0	0
13	I	15	0	0	0	0
13	J	17	0	0	0	0
13	M	14	0	0	0	0
13	N	33	0	0	0	0
13	S	11	0	0	0	0
All	All	19193	0	14008	15	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 0.

All (15) 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)
2:A:1130:A:O2'	6:I:5:GLN:NE2	2.48	0.47
10:S:50:ALA:HB1	10:S:57:HIS:HB3	1.97	0.47
1:4:63:ARG:NH2	2:A:1312:G:OP2	2.47	0.46
4:C:6:HIS:CG	9:N:89:MET:HB3	2.51	0.46
8:M:90:ARG:HD3	8:M:96:PRO:O	2.16	0.44
2:A:946:A:H2'	2:A:947:G:C8	2.53	0.43
2:A:1226:C:OP1	8:M:90:ARG:NH2	2.50	0.43
9:N:10:GLU:HG3	9:N:63:ARG:HD2	2.01	0.43
2:A:975:A:N1	2:A:1366:C:O2'	2.47	0.42
2:A:1251:A:H2'	2:A:1252:A:O4'	2.20	0.42
2:A:986:U:H2'	2:A:987:G:O4'	2.20	0.41
7:J:10:LEU:HD12	7:J:22:THR:HG23	2.02	0.41
2:A:1273:C:H2'	2:A:1274:A:O4'	2.21	0.41
8:M:16:VAL:HB	8:M:41:GLU:HB2	2.02	0.41
2:A:1180:A:P	6:I:99:ARG:HH12	2.43	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	4	10/70 (14%)	10 (100%)	0	0	100	100
3	B	210/241 (87%)	196 (93%)	14 (7%)	0	100	100
4	C	198/233 (85%)	195 (98%)	3 (2%)	0	100	100
5	G	138/179 (77%)	132 (96%)	6 (4%)	0	100	100
6	I	125/130 (96%)	119 (95%)	6 (5%)	0	100	100
7	J	96/103 (93%)	91 (95%)	4 (4%)	1 (1%)	15	10
8	M	113/118 (96%)	112 (99%)	1 (1%)	0	100	100
9	N	98/101 (97%)	97 (99%)	1 (1%)	0	100	100
10	S	81/92 (88%)	81 (100%)	0	0	100	100
All	All	1069/1267 (84%)	1033 (97%)	35 (3%)	1 (0%)	54	53

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
7	J	57	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	4	11/62 (18%)	11 (100%)	0	100	100
3	B	180/199 (90%)	176 (98%)	4 (2%)	52	55
4	C	167/190 (88%)	165 (99%)	2 (1%)	71	77
5	G	119/147 (81%)	116 (98%)	3 (2%)	47	50
6	I	105/107 (98%)	104 (99%)	1 (1%)	76	81
7	J	86/90 (96%)	85 (99%)	1 (1%)	71	77
8	M	93/96 (97%)	93 (100%)	0	100	100
9	N	83/84 (99%)	83 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
10	S	72/79 (91%)	72 (100%)	0	100 100
All	All	916/1054 (87%)	905 (99%)	11 (1%)	72 77

All (11) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
3	B	11	LYS
3	B	23	TRP
3	B	139	ARG
3	B	190	ASN
4	C	170	GLU
4	C	185	ASN
5	G	80	VAL
5	G	144	MET
5	G	154	TYR
6	I	123	ARG
7	J	84	VAL

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (7) such sidechains are listed below:

Mol	Chain	Res	Type
3	B	177	ASN
5	G	28	ASN
5	G	68	ASN
6	I	4	ASN
6	I	5	GLN
6	I	75	GLN
6	I	81	HIS

5.3.3 RNA (i)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
2	A	459/1540 (29%)	73 (15%)	7 (1%)

All (73) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
2	A	934	C
2	A	935	A

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Mol	Chain	Res	Type
2	A	960	U
2	A	969	A
2	A	971	G
2	A	975	A
2	A	976	G
2	A	977	A
2	A	993	G
2	A	1002	G
2	A	1003	G
2	A	1004	A
2	A	1006	G
2	A	1019	A
2	A	1020	G
2	A	1025	U
2	A	1026	G
2	A	1027	C
2	A	1028	C
2	A	1030	U
2	A	1031	C
2	A	1033	G
2	A	1034	G
2	A	1035	A
2	A	1036	A
2	A	1037	C
2	A	1039	G
2	A	1065	U
2	A	1085	U
2	A	1094	G
2	A	1095	U
2	A	1101	A
2	A	1125	U
2	A	1133	G
2	A	1134	G
2	A	1137	C
2	A	1138	G
2	A	1139	G
2	A	1140	C
2	A	1157	A
2	A	1159	U
2	A	1167	A
2	A	1168	U
2	A	1171	A

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
2	A	1174	G
2	A	1183	U
2	A	1184	G
2	A	1196	A
2	A	1197	A
2	A	1213	A
2	A	1214	C
2	A	1227	A
2	A	1228	C
2	A	1238	A
2	A	1256	A
2	A	1257	A
2	A	1275	A
2	A	1280	A
2	A	1286	U
2	A	1287	A
2	A	1300	G
2	A	1302	C
2	A	1317	C
2	A	1319	A
2	A	1320	C
2	A	1338	G
2	A	1346	A
2	A	1353	G
2	A	1363	A
2	A	1368	A
2	A	1370	G
2	A	1378	C
2	A	1379	G

All (7) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
2	A	1025	U
2	A	1027	C
2	A	1137	C
2	A	1139	G
2	A	1225	A
2	A	1319	A
2	A	1335	U

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

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

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
2	5MC	A	967	2	18,22,23	0.35	0	26,32,35	0.74	0
2	2MG	A	966	2	18,26,27	1.05	2 (11%)	16,38,41	0.62	0
2	2MG	A	1207	11,2	18,26,27	1.05	2 (11%)	16,38,41	0.78	0

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	5MC	A	967	2	-	0/7/25/26	0/2/2/2
2	2MG	A	966	2	-	0/5/27/28	0/3/3/3
2	2MG	A	1207	11,2	-	0/5/27/28	0/3/3/3

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	966	2MG	C5-C6	-2.43	1.42	1.47
2	A	1207	2MG	C5-C6	-2.32	1.42	1.47
2	A	1207	2MG	C8-N7	-2.08	1.31	1.35
2	A	966	2MG	C8-N7	-2.05	1.31	1.35

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

5.5 Carbohydrates (i)

There are no monosaccharides in this entry.

5.6 Ligand geometry (i)

Of 42 ligands modelled in this entry, 42 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

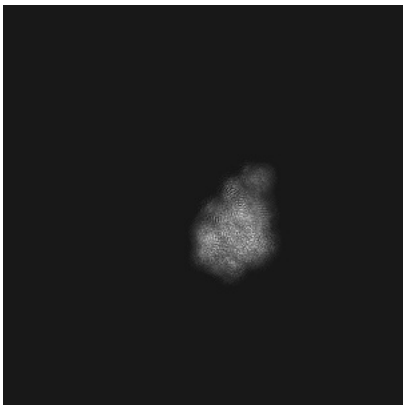
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-16536. These allow visual inspection of the internal detail of the map and identification of artifacts.

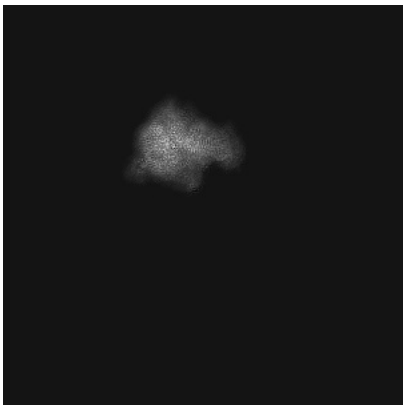
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

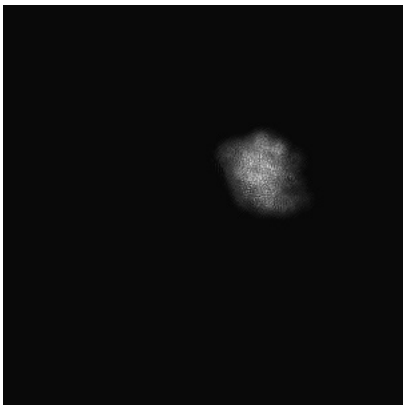
6.1.1 Primary map



X

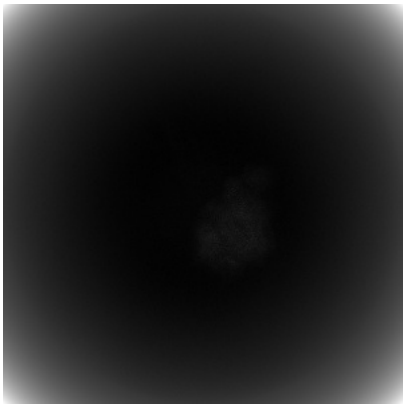


Y

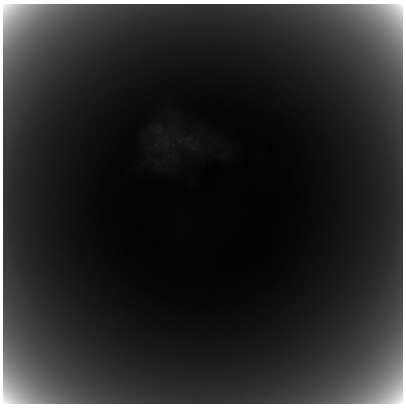


Z

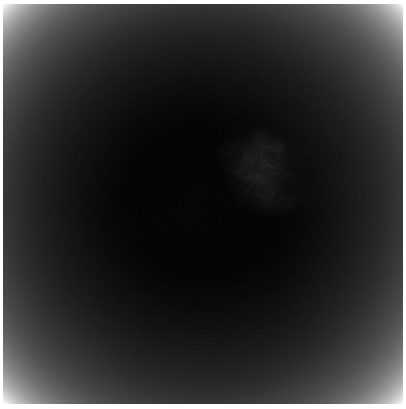
6.1.2 Raw map



X



Y

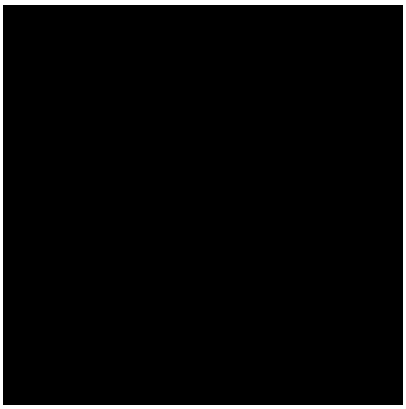


Z

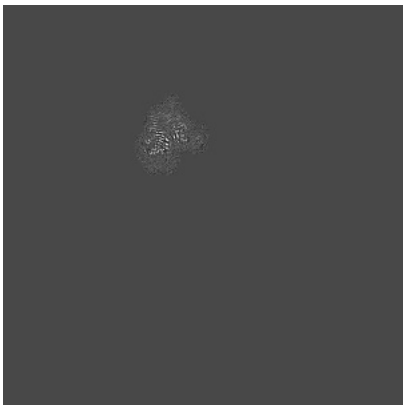
The images above show the map projected in three orthogonal directions.

6.2 Central slices (i)

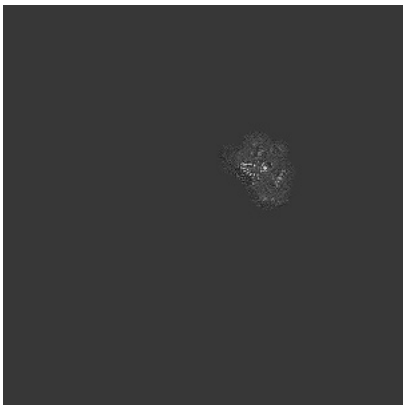
6.2.1 Primary map



X Index: 360

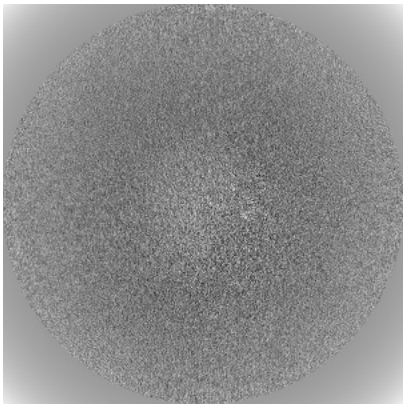


Y Index: 360

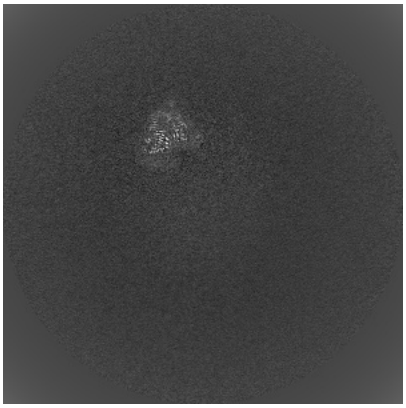


Z Index: 360

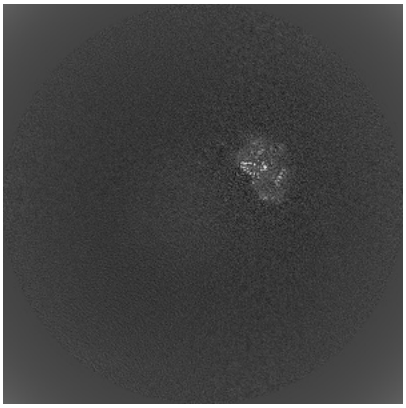
6.2.2 Raw map



X Index: 360



Y Index: 360

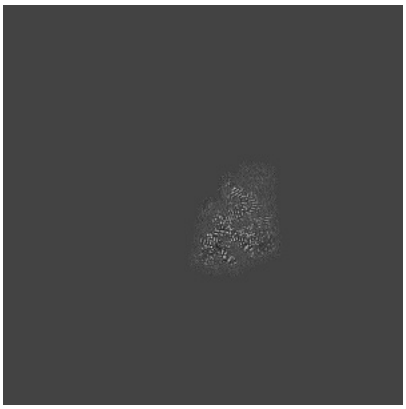


Z Index: 360

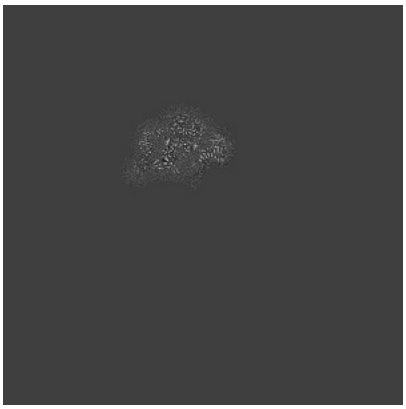
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

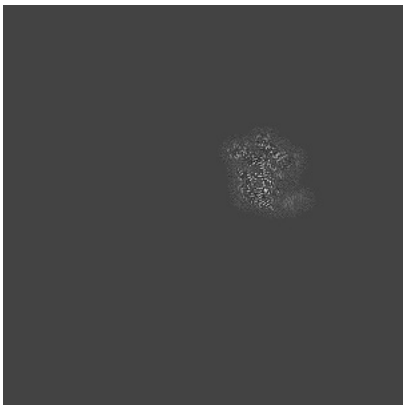
6.3.1 Primary map



X Index: 464



Y Index: 413

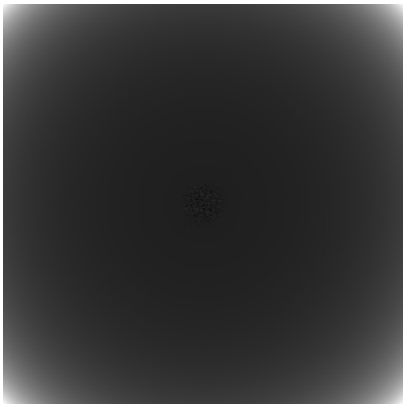


Z Index: 296

6.3.2 Raw map

X Index: 0

Y Index: 0

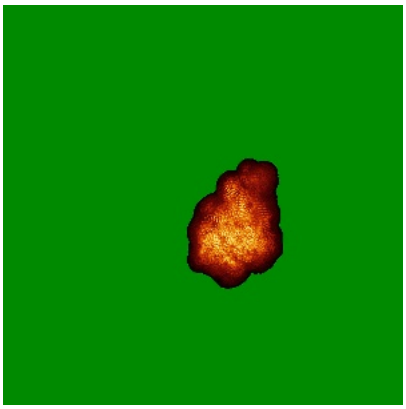


Z Index: 0

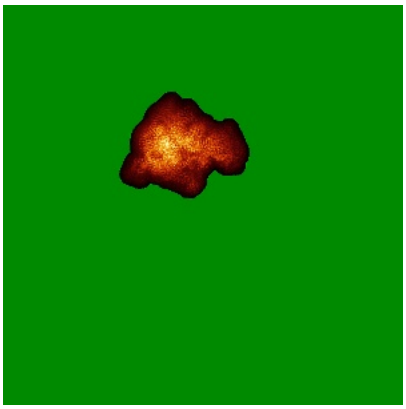
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal standard-deviation projections (False-color) (i)

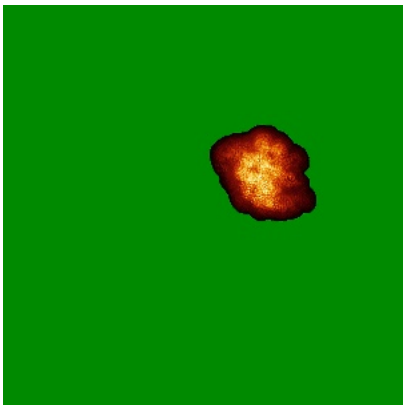
6.4.1 Primary map



X

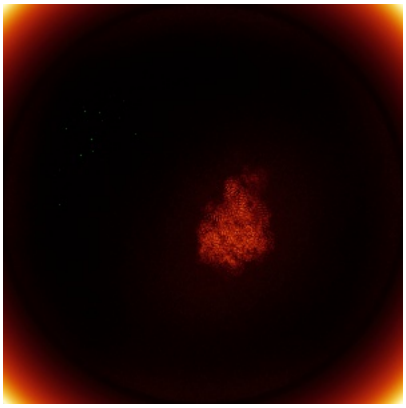


Y

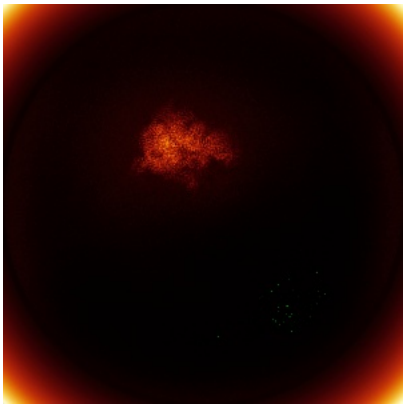


Z

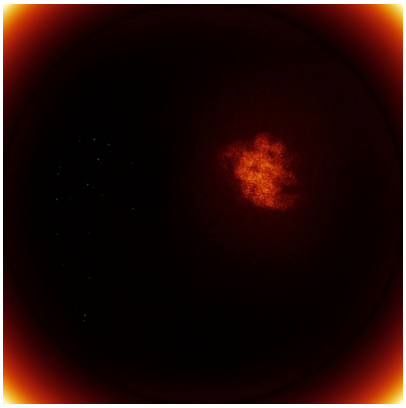
6.4.2 Raw map



X



Y

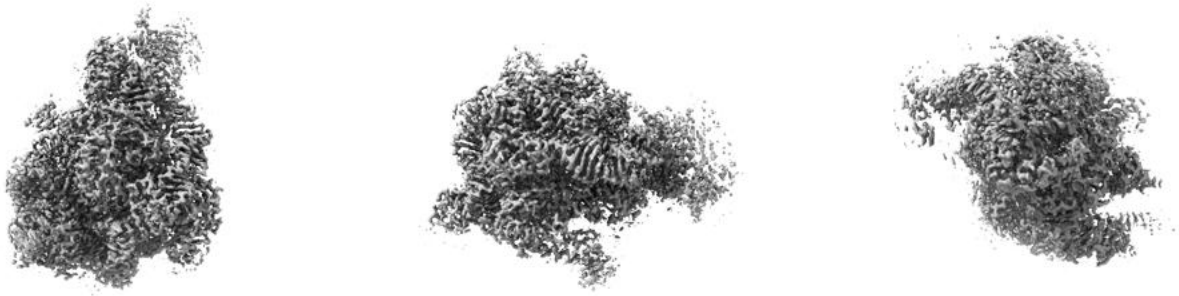


Z

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)

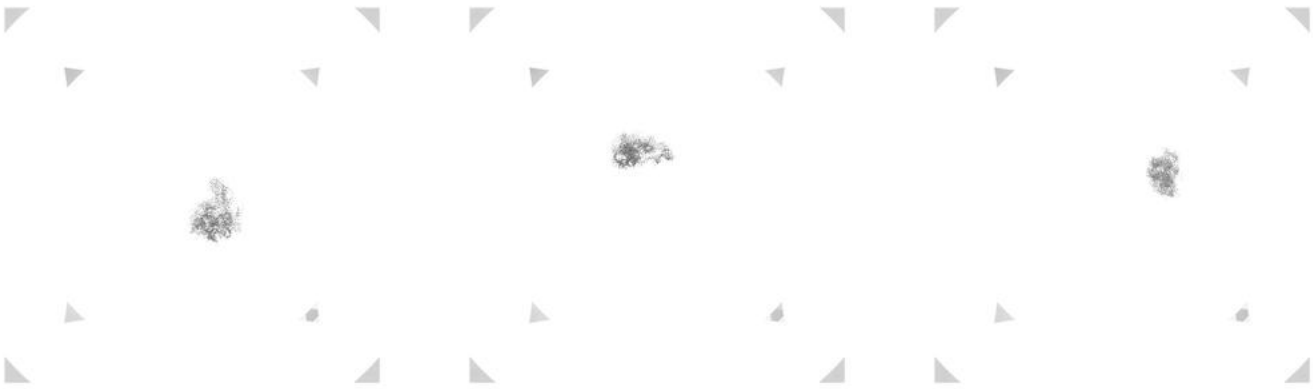
6.5.1 Primary map



X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.0111. 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.

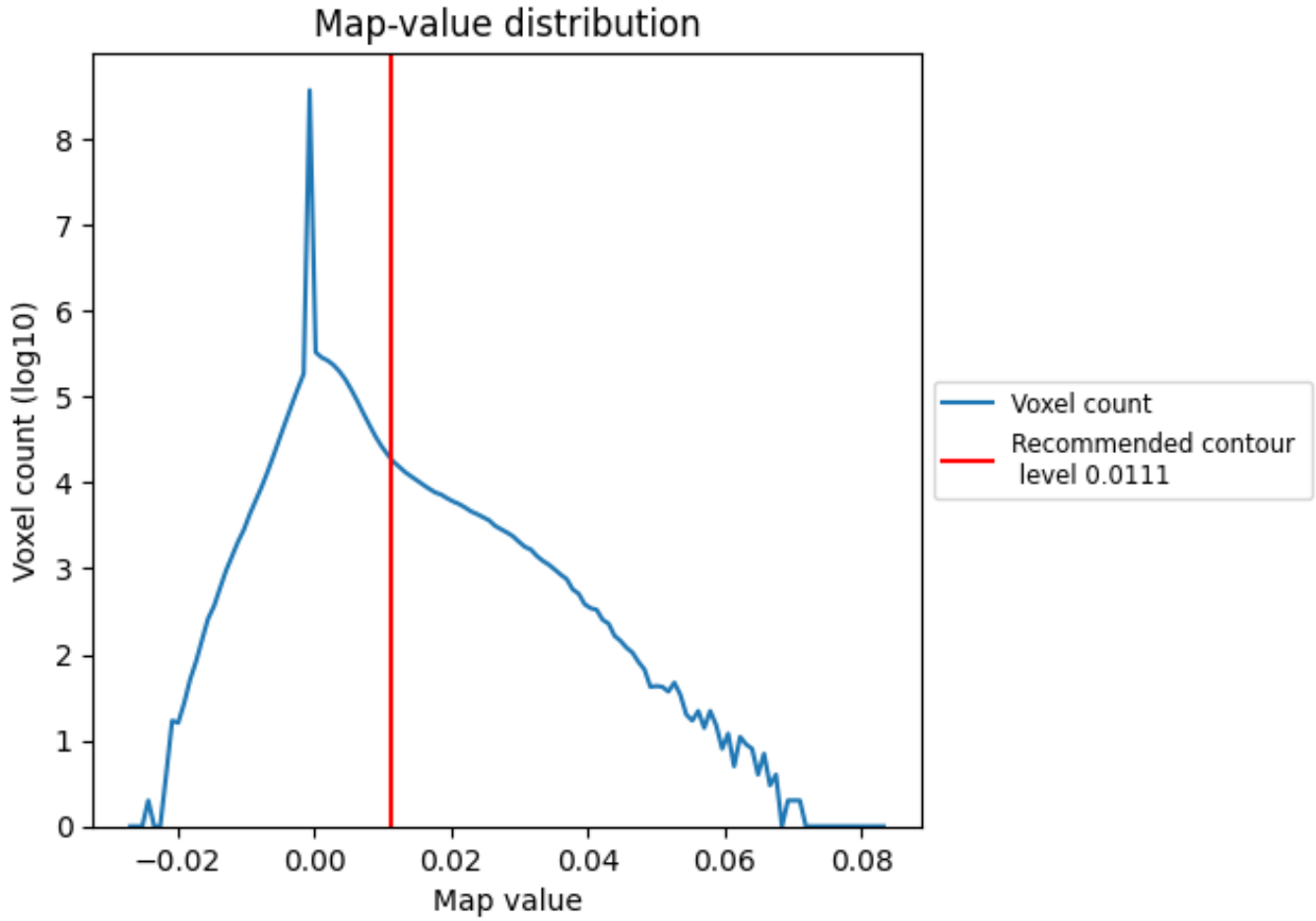
6.6 Mask visualisation (i)

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

7 Map analysis

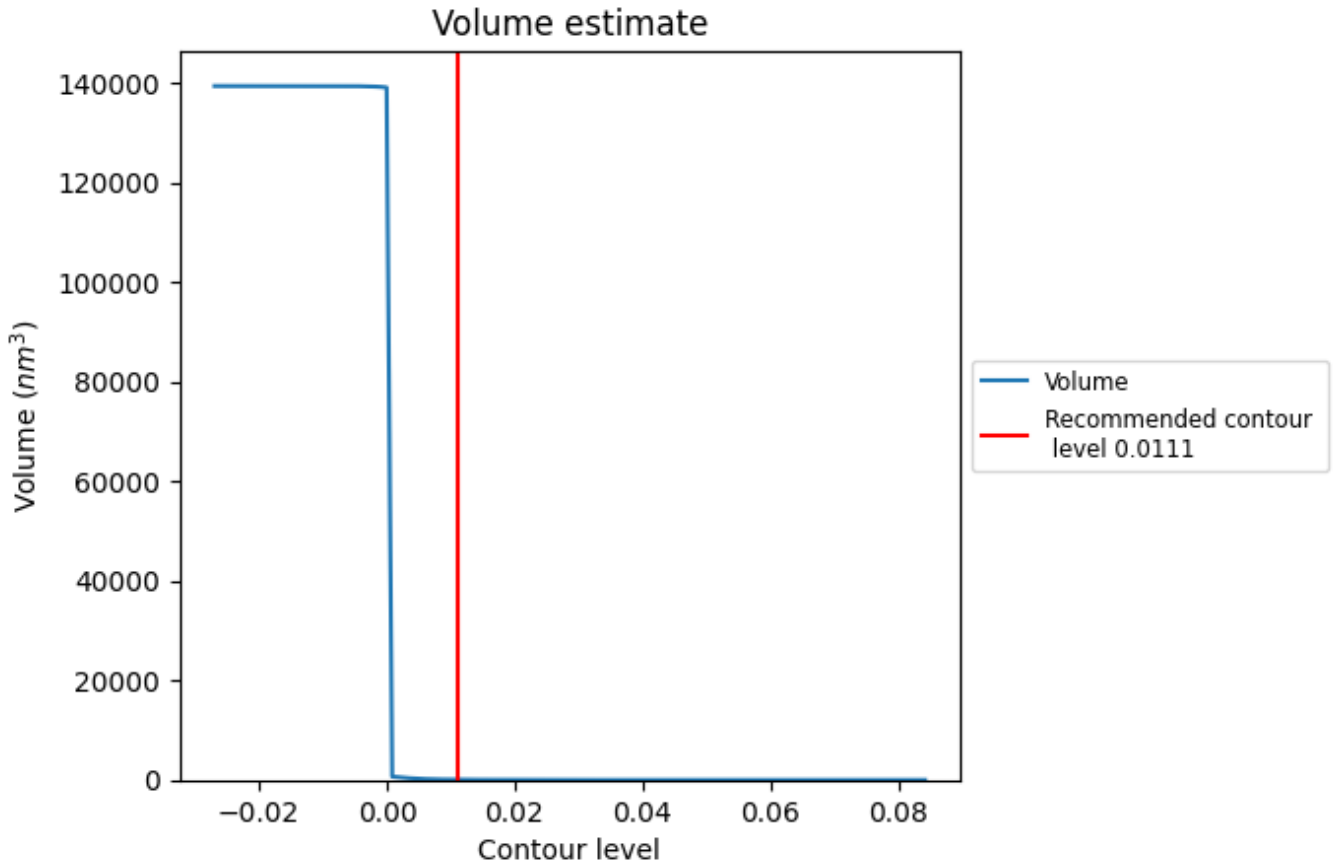
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution



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

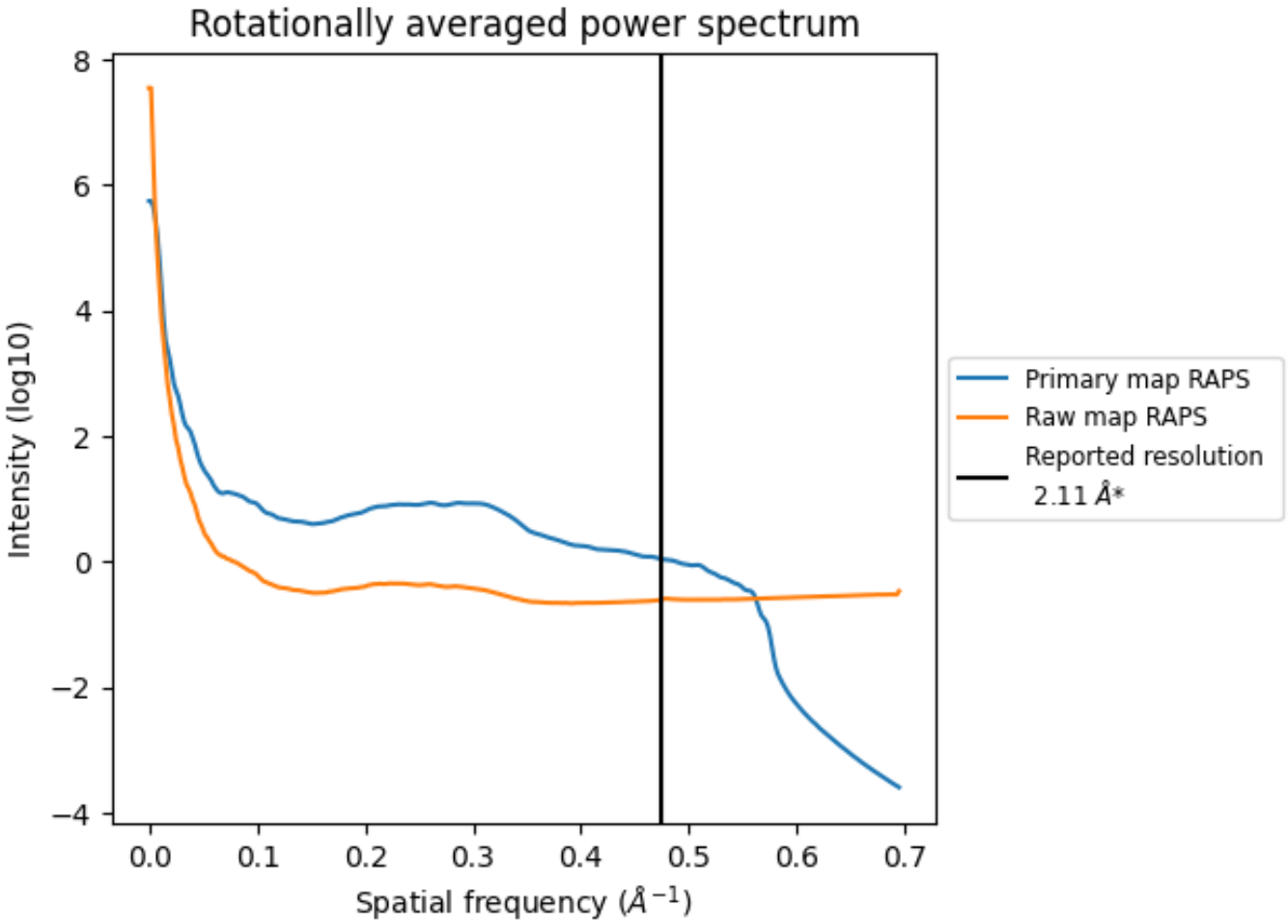
7.2 Volume estimate



The volume at the recommended contour level is 67 nm^3; this corresponds to an approximate mass of 60 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)

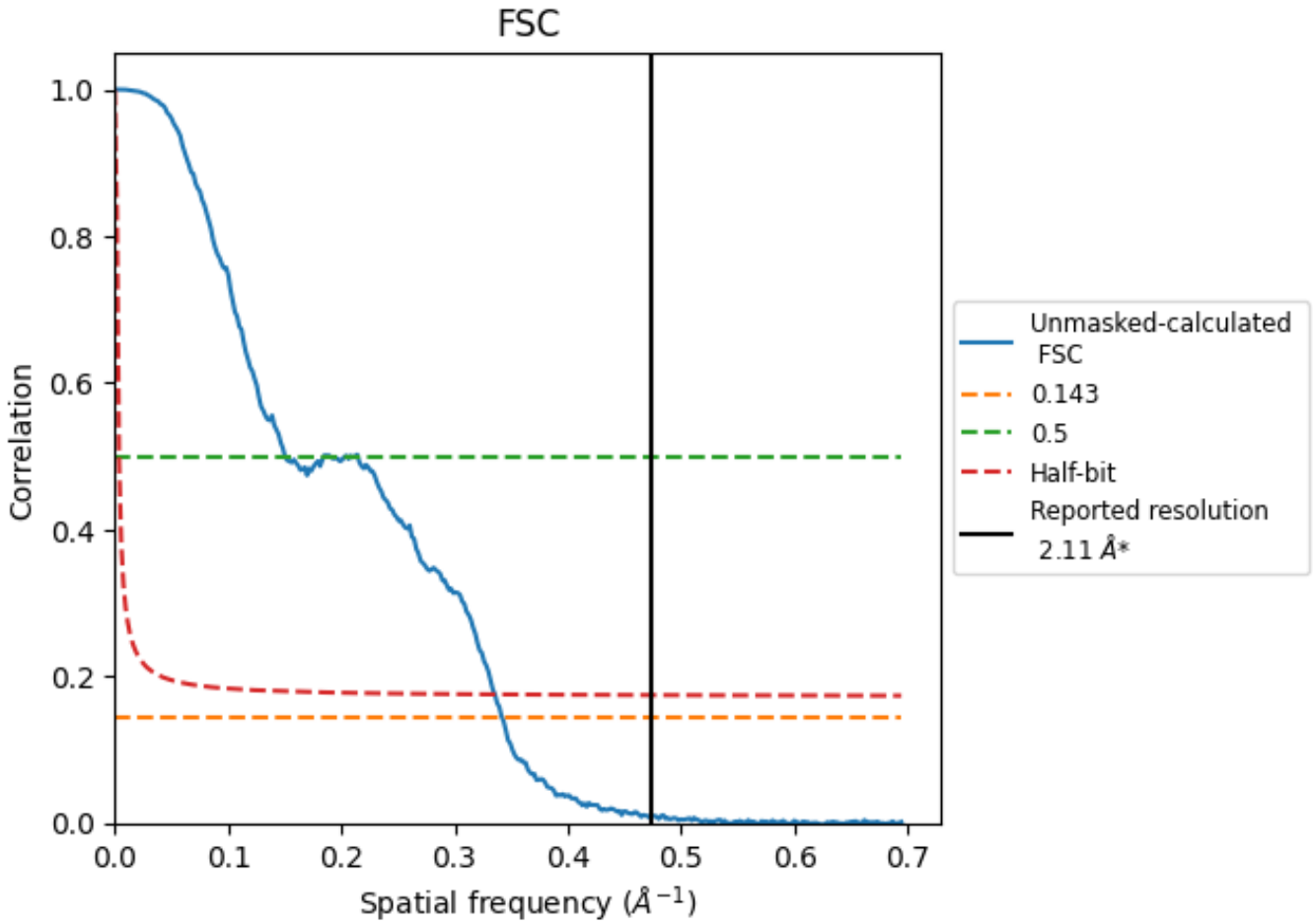


*Reported resolution corresponds to spatial frequency of 0.474 Å^{-1}

8 Fourier-Shell correlation

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

8.1 FSC



*Reported resolution corresponds to spatial frequency of 0.474 Å^{-1}

8.2 Resolution estimates (i)

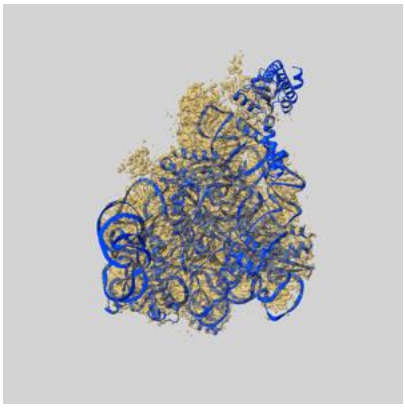
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.11	-	-
Author-provided FSC curve	-	-	-
Unmasked-calculated*	2.92	6.66	2.98

*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 2.92 differs from the reported value 2.11 by more than 10 %

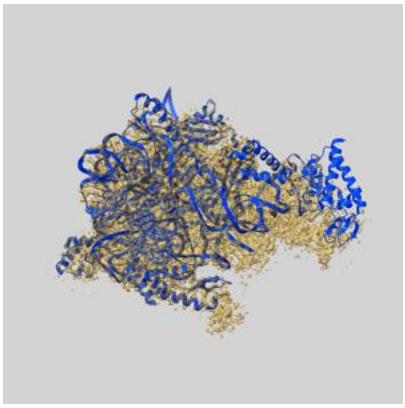
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-16536 and PDB model 8CAZ. Per-residue inclusion information can be found in section 3 on page 7.

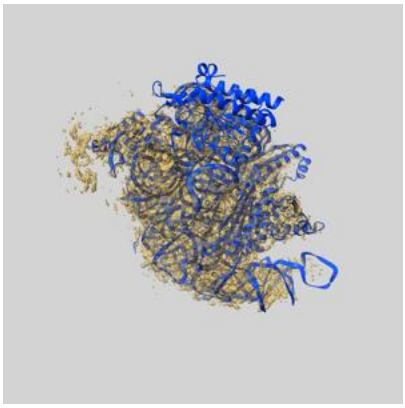
9.1 Map-model overlay



X



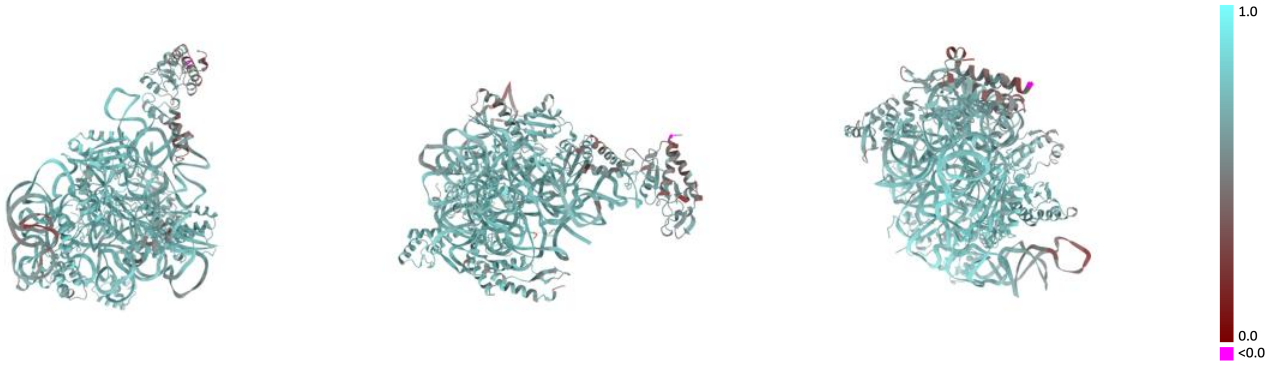
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.0111 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

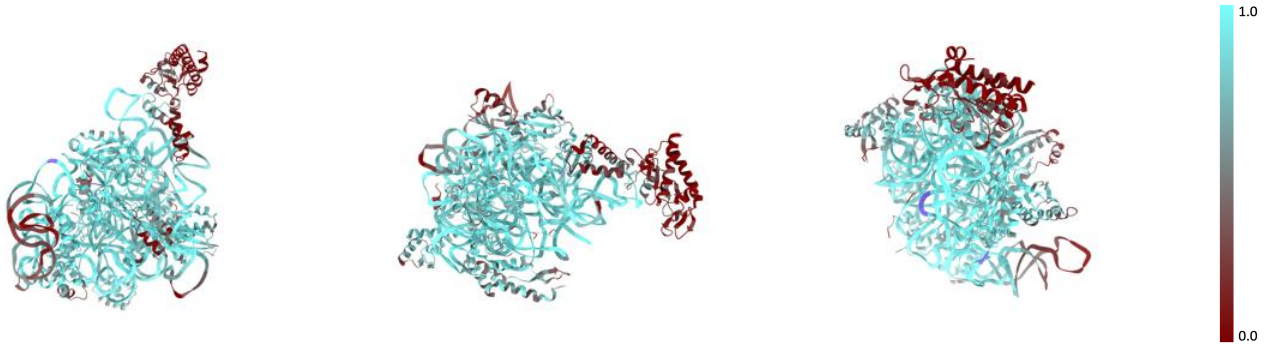
9.2 Q-score mapped to coordinate model (i)



X Y Z

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

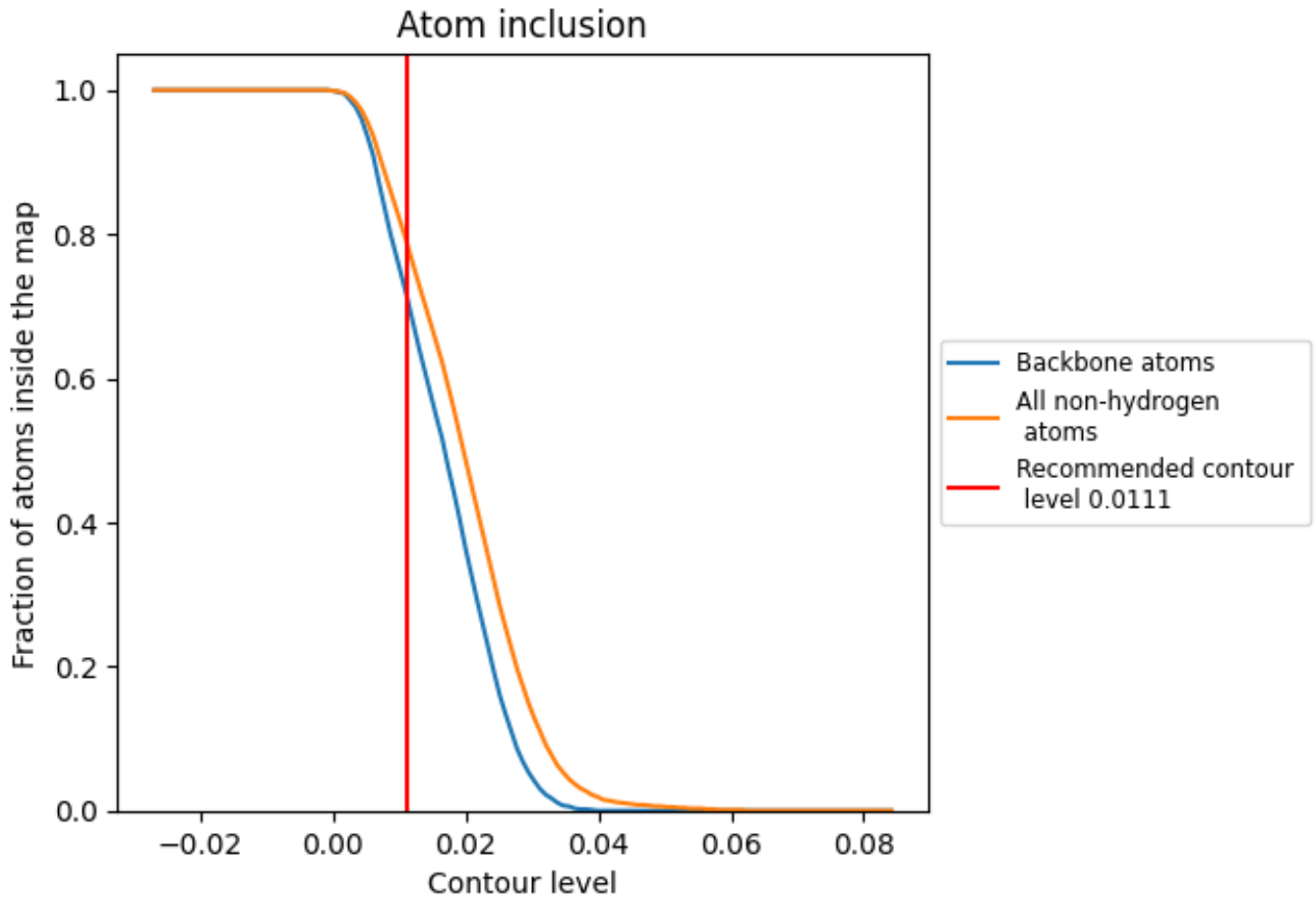
9.3 Atom inclusion mapped to coordinate model (i)



X Y Z

The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.0111).

9.4 Atom inclusion (i)



At the recommended contour level, 72% of all backbone atoms, 79% 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 (0.0111) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.7900	0.7010
4	0.1880	0.5880
A	0.8930	0.7210
B	0.1880	0.5330
C	0.8470	0.7290
G	0.7030	0.6700
I	0.8360	0.7240
J	0.6610	0.6720
M	0.8070	0.7280
N	0.9020	0.7540
S	0.8790	0.7390