wwPDB EM Validation Summary Report (i)

Feb 22, 2025 – 01:15 PM EST

PDB ID	:	9HAI
EMDB ID	:	EMD-51981
Title	:	Pooled 50S subunit C-CP_L2-L28 precursor states supplemented with Api137
Authors	:	Lauer, S.; Nikolay, R.; Spahn, C.M.T.
Deposited on	:	2024-11-04
Resolution	:	3.01 Å(reported)

This is a wwPDB EM Validation Summary 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 (i) 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 (i)) were used in the production of this report:

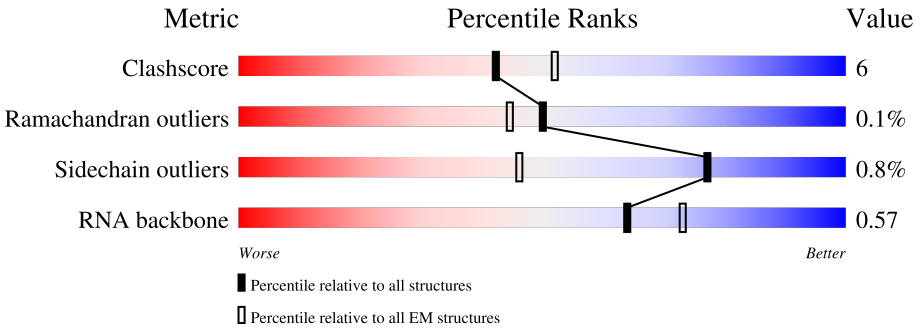
EMDB validation analysis	:	0.0.1.dev117
MolProbity	:	4.02b-467
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.41.4

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 3.01 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 <=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	0	56	84% 16%
2	2	46	87% 13%
3	J	142	79% 21%
4	K	122	86% 14%
5	N	120	82% 18%
6	P	114	91% 9%
7	Q	117	87% 13%

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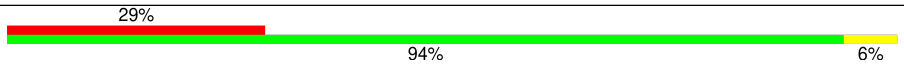
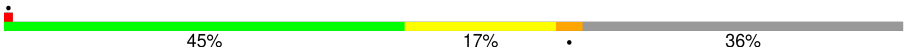
Mol	Chain	Length	Quality of chain
8	R	103	
9	S	110	
10	T	93	
11	U	102	
12	Y	63	
13	Z	58	
14	y	17	
15	A	2903	
16	D	209	
17	E	201	
18	L	143	

2 Entry composition (i)

There are 18 unique types of molecules in this entry. The entry contains 53870 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 bL32.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	0	56	444	269	94	80	1	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	46	377	228	90	57	2	0	0

- Molecule 3 is a protein called Large ribosomal subunit protein uL13.

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

- Molecule 4 is a protein called Large ribosomal subunit protein uL14.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	K	122	939	587	180	166	6	0	0

- Molecule 5 is a protein called Large ribosomal subunit protein bL17.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	N	120	961	593	196	167	5	0	0

- Molecule 6 is a protein called Large ribosomal subunit protein bL19.

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

- Molecule 7 is a protein called Large ribosomal subunit protein bL20.

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

- Molecule 8 is a protein called Large ribosomal subunit protein bL21.

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

- Molecule 9 is a protein called Large ribosomal subunit protein uL22.

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

- Molecule 10 is a protein called Large ribosomal subunit protein uL23.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	T	93	Total 739	C 466	N 139	O 132	S 2	0	0

- Molecule 11 is a protein called Large ribosomal subunit protein uL24.

Mol	Chain	Residues	Atoms				AltConf	Trace
11	U	102	Total 780	C 492	N 146	O 142	0	0

- Molecule 12 is a protein called Large ribosomal subunit protein uL29.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	Y	61	Total 499	C 308	N 97	O 92	S 2	0	0

- Molecule 13 is a protein called Large ribosomal subunit protein uL30.

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

- Molecule 14 is a protein called Apidaecins type 22.

Mol	Chain	Residues	Atoms				AltConf	Trace
14	y	17	Total	C	N	O	0	0
			148	94	33	21		

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
y	10	ARG	GLN	conflict	UNP P35581

- Molecule 15 is a RNA chain called 23S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	A	1869	Total	C	N	O	P	0	0
			40164	17916	7439	12940	1869		

- Molecule 16 is a protein called 50S ribosomal protein L3.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	D	184	Total	C	N	O	S	0	0
			1379	871	248	256	4		

- Molecule 17 is a protein called Large ribosomal subunit protein uL4.

Mol	Chain	Residues	Atoms					AltConf	Trace
17	E	192	Total	C	N	O	S	0	0
			1481	934	263	279	5		

- Molecule 18 is a protein called Large ribosomal subunit protein uL15.

Mol	Chain	Residues	Atoms				AltConf	Trace
18	L	117	Total	C	N	O	0	0
			844	527	161	156		

3 Residue-property plots (i)

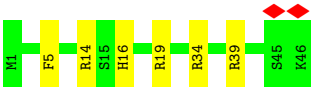
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion 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 bL32

Chain 0:

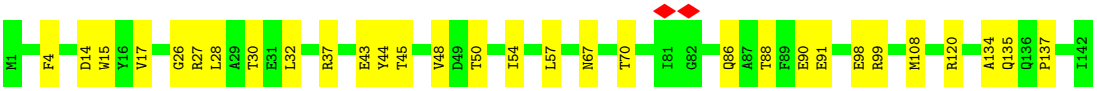
• Molecule 2: Large ribosomal subunit protein bL34

Chain 2:



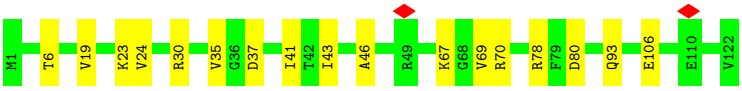
• Molecule 3: Large ribosomal subunit protein uL13

Chain J:



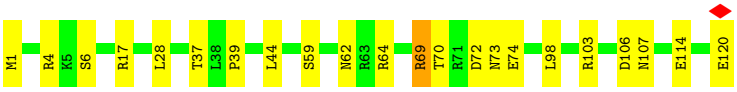
• Molecule 4: Large ribosomal subunit protein uL14

Chain K:



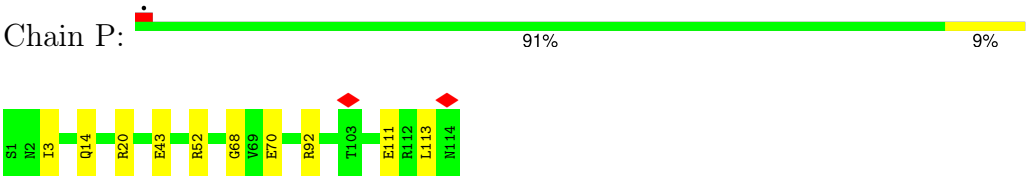
• Molecule 5: Large ribosomal subunit protein bL17

Chain N:



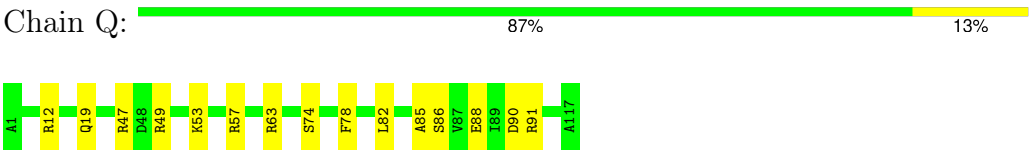
• Molecule 6: Large ribosomal subunit protein bL19

Chain P:



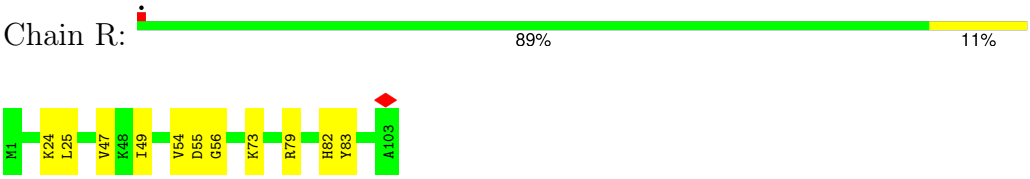
• Molecule 7: Large ribosomal subunit protein bL20

Chain Q:



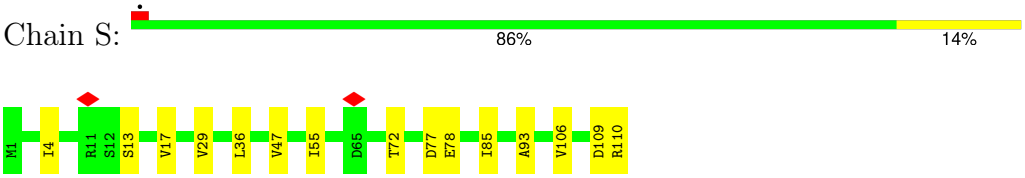
• Molecule 8: Large ribosomal subunit protein bL21

Chain R:



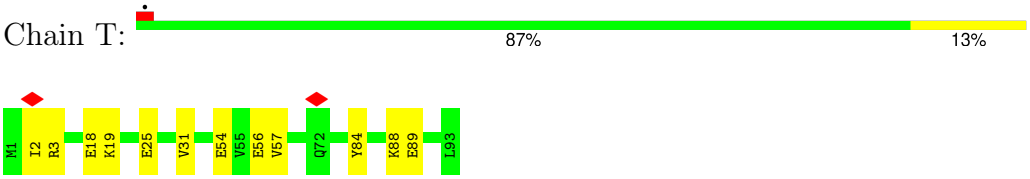
• Molecule 9: Large ribosomal subunit protein uL22

Chain S:



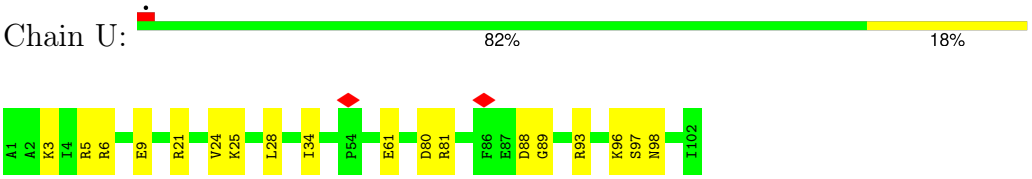
• Molecule 10: Large ribosomal subunit protein uL23

Chain T:



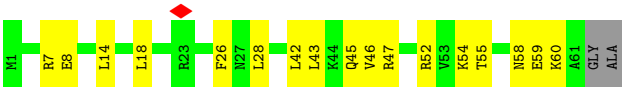
• Molecule 11: Large ribosomal subunit protein uL24

Chain U:



• Molecule 12: Large ribosomal subunit protein uL29

Chain Y:

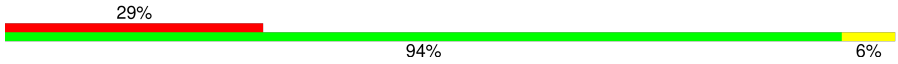


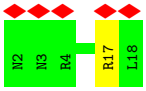
• Molecule 13: Large ribosomal subunit protein uL30

Chain Z:

• Molecule 14: Apidaecins type 22

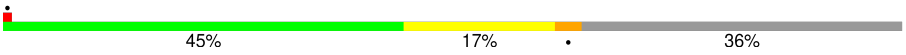
Chain y:

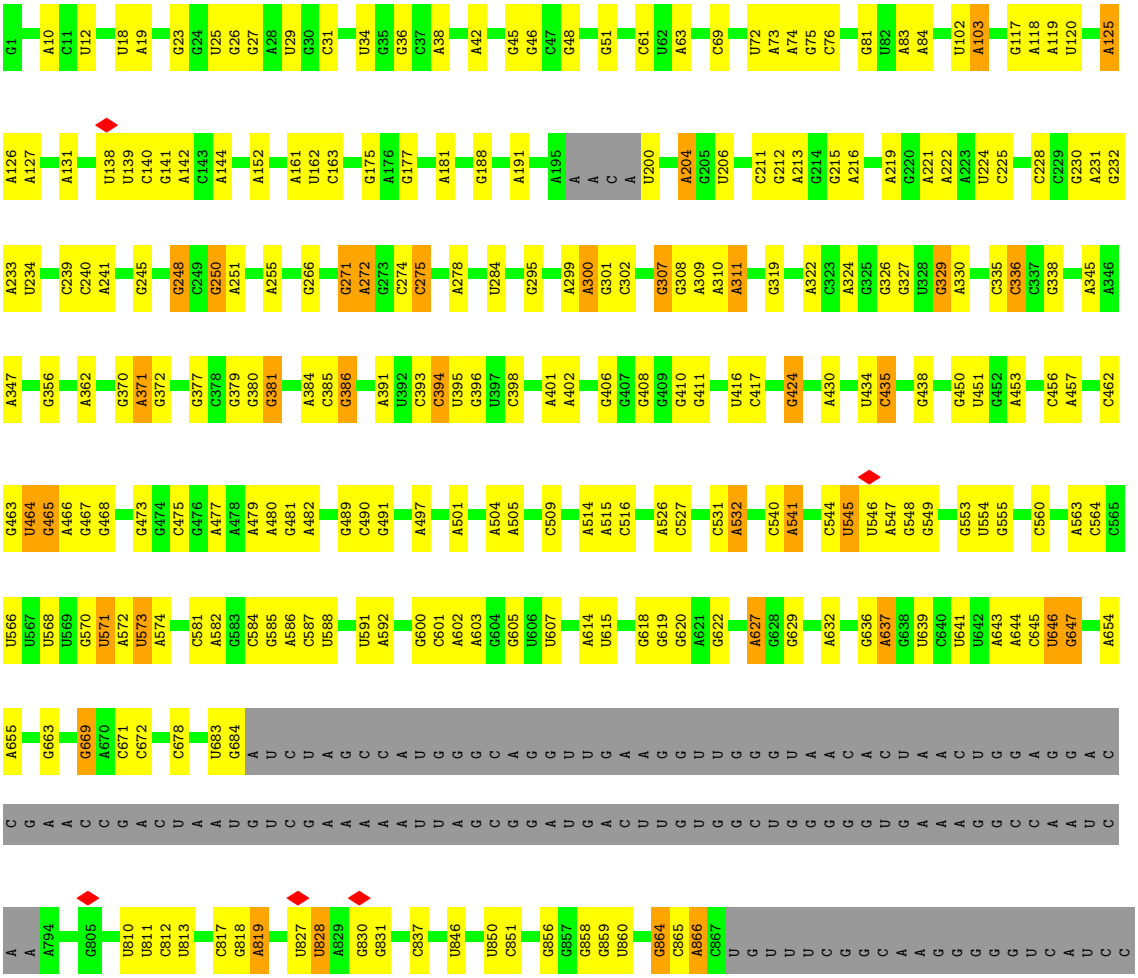


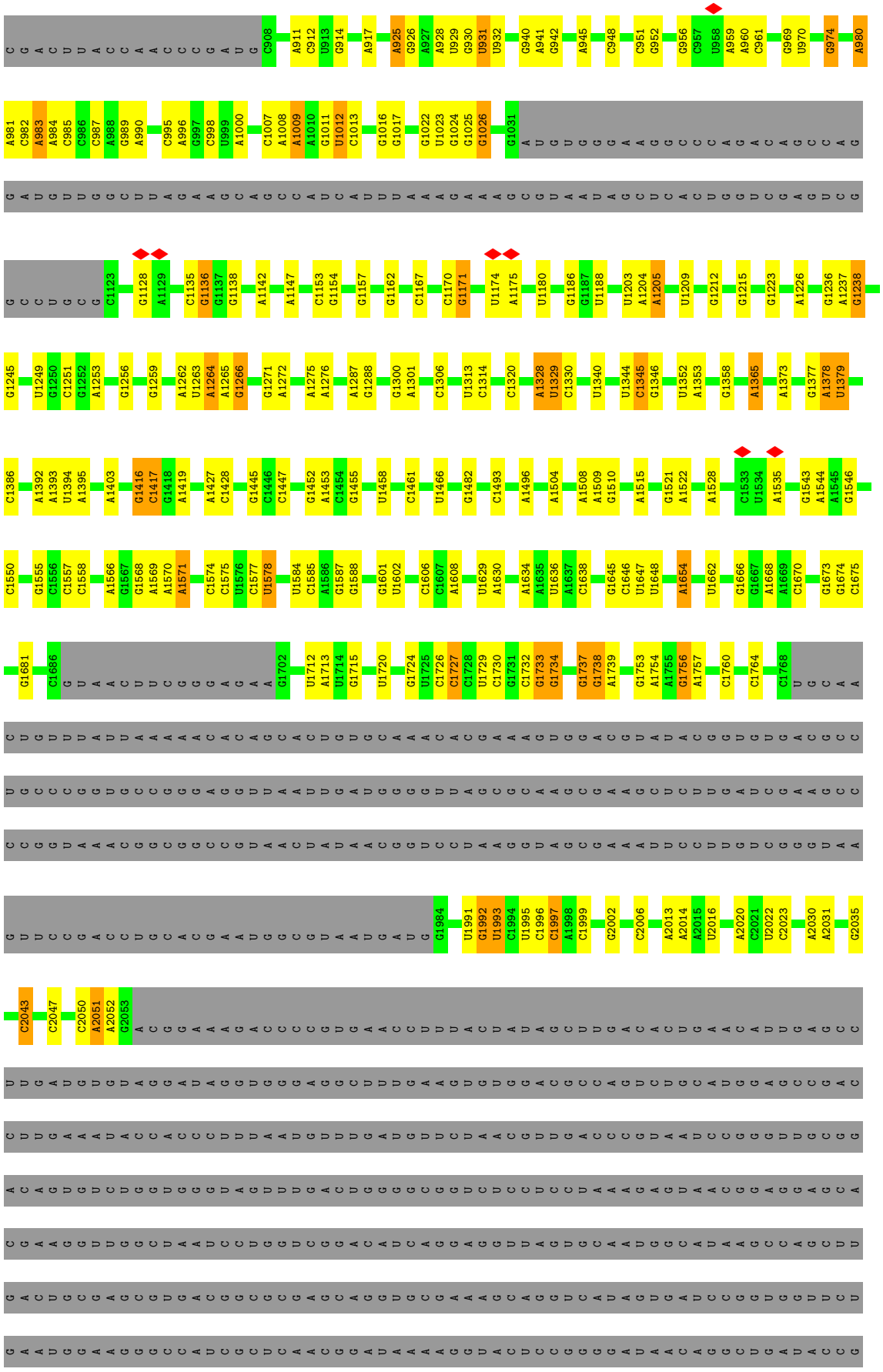


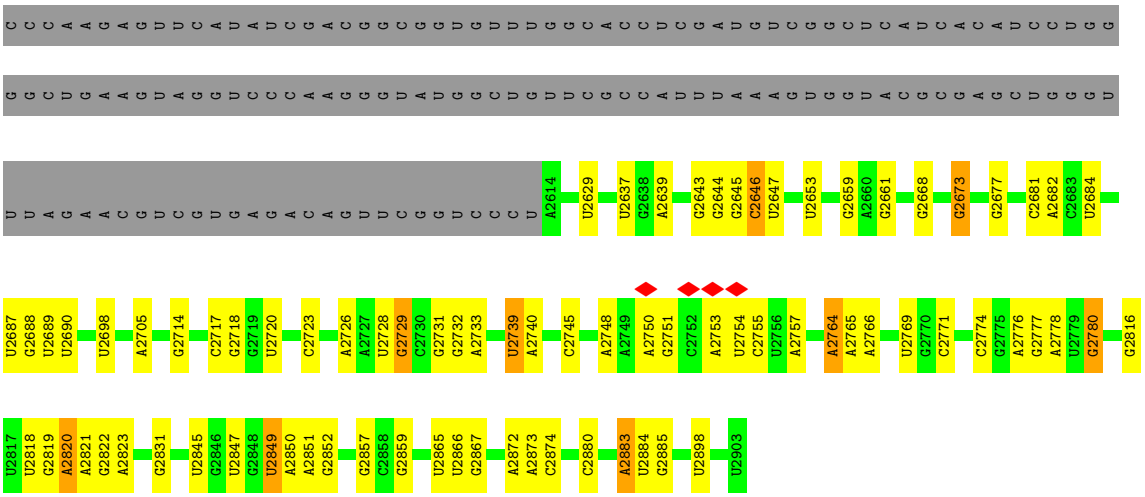
• Molecule 15: 23S ribosomal RNA

Chain A:



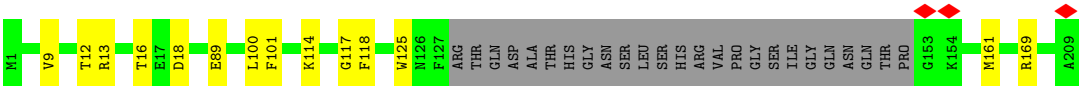






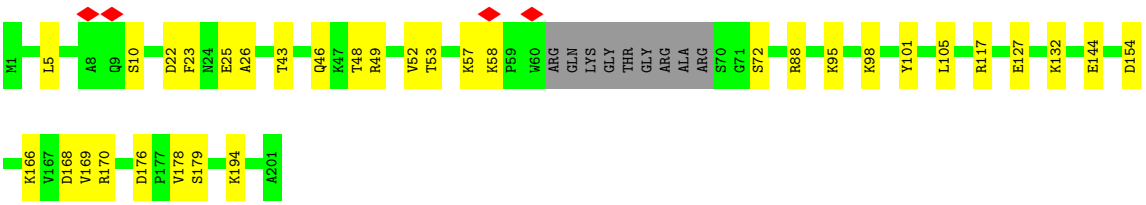
• Molecule 16: 50S ribosomal protein L3

Chain D:



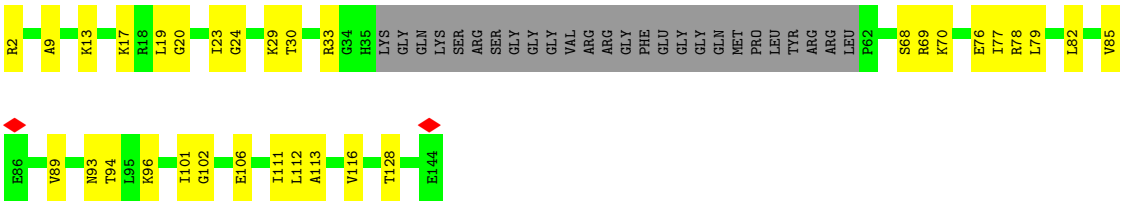
• Molecule 17: Large ribosomal subunit protein uL4

Chain E:



• Molecule 18: Large ribosomal subunit protein uL15

Chain L:



4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	154257	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 ($e^-/Å^2$)	46.2	Depositor
Minimum defocus (nm)	800	Depositor
Maximum defocus (nm)	2000	Depositor
Magnification	Not provided	
Image detector	GATAN K3 BIOQUANTUM (6k x 4k)	Depositor
Maximum map value	0.775	Depositor
Minimum map value	-0.299	Depositor
Average map value	-0.002	Depositor
Map value standard deviation	0.029	Depositor
Recommended contour level	0.067	Depositor
Map size (Å)	399.6, 399.6, 399.6	wwPDB
Map dimensions	300, 300, 300	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.332, 1.332, 1.332	Depositor

5 Model quality

5.1 Standard geometry

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	0	0.23	0/450	0.54	0/599
2	2	0.25	0/380	0.64	0/498
3	J	0.25	0/1152	0.50	0/1551
4	K	0.25	0/948	0.54	0/1268
5	N	0.24	0/974	0.57	0/1301
6	P	0.25	0/929	0.54	0/1242
7	Q	0.25	0/960	0.51	0/1278
8	R	0.25	0/829	0.53	0/1107
9	S	0.24	0/864	0.51	0/1156
10	T	0.24	0/745	0.51	0/994
11	U	0.26	0/788	0.51	0/1051
12	Y	0.24	0/500	0.55	0/665
13	Z	0.54	0/453	0.55	0/605
14	y	0.47	0/155	0.67	0/212
15	A	0.18	0/44989	0.72	13/70177 (0.0%)
16	D	0.25	0/1395	0.51	0/1872
17	E	0.24	0/1499	0.47	0/2018
18	L	0.59	0/849	0.66	0/1132
All	All	0.21	0/58859	0.69	13/88726 (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
18	L	0	1

There are no bond length outliers.

The worst 5 of 13 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
15	A	394	C	N3-C2-O2	-10.48	114.56	121.90

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
15	A	925	A	OP1-P-O3'	9.59	126.30	105.20
15	A	925	A	P-O3'-C3'	8.87	130.35	119.70
15	A	394	C	N1-C2-O2	8.15	123.79	118.90
15	A	1727	C	N3-C2-O2	-7.22	116.84	121.90

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
18	L	69	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	0	444	0	461	10	0
2	2	377	0	418	5	0
3	J	1129	0	1162	23	0
4	K	939	0	1012	11	0
5	N	961	0	1000	17	0
6	P	917	0	965	10	0
7	Q	947	0	1022	14	0
8	R	816	0	839	10	0
9	S	857	0	922	10	0
10	T	739	0	807	9	0
11	U	780	0	834	13	0
12	Y	499	0	535	10	0
13	Z	449	0	491	18	0
14	y	148	0	152	0	0
15	A	40164	0	20209	333	0
16	D	1379	0	1440	12	0
17	E	1481	0	1540	24	0
18	L	844	0	908	63	0
All	All	53870	0	34717	469	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 6.

The worst 5 of 469 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)
15:A:587:C:C4	18:L:19:LEU:HD11	2.01	0.95
13:Z:42:ALA:O	15:A:851:C:O2'	1.89	0.90
15:A:980:A:O2'	15:A:981:A:O4'	1.91	0.89
6:P:92:ARG:NH1	15:A:1753:G:OP1	2.07	0.88
15:A:1417:C:O2'	15:A:1587:G:O2'	1.91	0.87

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	0	54/56 (96%)	51 (94%)	3 (6%)	0	100	100
2	2	44/46 (96%)	42 (96%)	2 (4%)	0	100	100
3	J	140/142 (99%)	139 (99%)	1 (1%)	0	100	100
4	K	120/122 (98%)	112 (93%)	8 (7%)	0	100	100
5	N	118/120 (98%)	111 (94%)	7 (6%)	0	100	100
6	P	112/114 (98%)	111 (99%)	1 (1%)	0	100	100
7	Q	115/117 (98%)	113 (98%)	2 (2%)	0	100	100
8	R	101/103 (98%)	99 (98%)	2 (2%)	0	100	100
9	S	108/110 (98%)	103 (95%)	5 (5%)	0	100	100
10	T	91/93 (98%)	85 (93%)	6 (7%)	0	100	100
11	U	100/102 (98%)	83 (83%)	17 (17%)	0	100	100
12	Y	59/63 (94%)	51 (86%)	7 (12%)	1 (2%)	7	31
13	Z	56/58 (97%)	55 (98%)	1 (2%)	0	100	100
14	y	15/17 (88%)	11 (73%)	4 (27%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
16	D	180/209 (86%)	172 (96%)	8 (4%)	0	100	100
17	E	188/201 (94%)	182 (97%)	6 (3%)	0	100	100
18	L	113/143 (79%)	96 (85%)	17 (15%)	0	100	100
All	All	1714/1816 (94%)	1616 (94%)	97 (6%)	1 (0%)	50	80

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
12	Y	46	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	0	47/47 (100%)	47 (100%)	0	100	100
2	2	38/38 (100%)	37 (97%)	1 (3%)	41	71
3	J	116/116 (100%)	116 (100%)	0	100	100
4	K	103/103 (100%)	103 (100%)	0	100	100
5	N	100/100 (100%)	98 (98%)	2 (2%)	50	77
6	P	99/99 (100%)	99 (100%)	0	100	100
7	Q	89/89 (100%)	89 (100%)	0	100	100
8	R	84/84 (100%)	83 (99%)	1 (1%)	67	85
9	S	93/93 (100%)	93 (100%)	0	100	100
10	T	80/80 (100%)	79 (99%)	1 (1%)	65	84
11	U	83/83 (100%)	82 (99%)	1 (1%)	67	85
12	Y	55/55 (100%)	53 (96%)	2 (4%)	30	62
13	Z	48/48 (100%)	48 (100%)	0	100	100
14	y	17/17 (100%)	16 (94%)	1 (6%)	16	46
16	D	143/164 (87%)	143 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
17	E	159/165 (96%)	157 (99%)	2 (1%)	65 84
18	L	83/102 (81%)	83 (100%)	0	100 100
All	All	1437/1483 (97%)	1426 (99%)	11 (1%)	77 90

5 of 11 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
12	Y	26	PHE
14	y	17	ARG
17	E	194	LYS
17	E	25	GLU
10	T	88	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (3) such sidechains are listed below:

Mol	Chain	Res	Type
10	T	70	HIS
16	D	185	ASN
18	L	99	ASN

5.3.3 RNA (i)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
15	A	1861/2903 (64%)	240 (12%)	4 (0%)

5 of 240 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
15	A	10	A
15	A	12	U
15	A	26	G
15	A	27	G
15	A	34	U

All (4) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
15	A	271	G
15	A	464	U

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Mol	Chain	Res	Type
15	A	1328	A
15	A	1378	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.

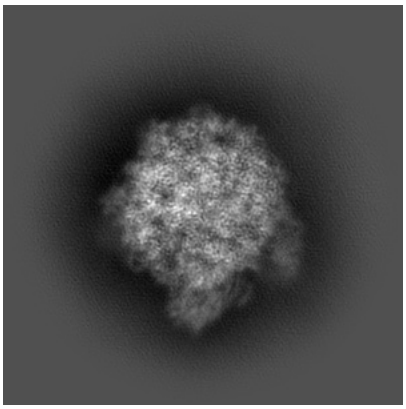
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-51981. These allow visual inspection of the internal detail of the map and identification of artifacts.

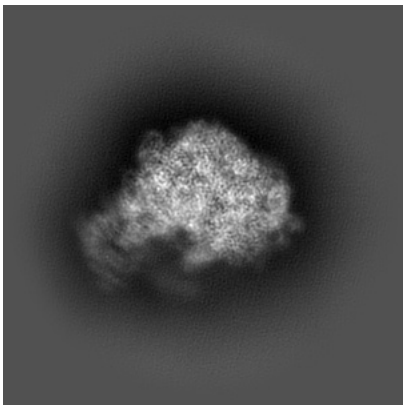
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

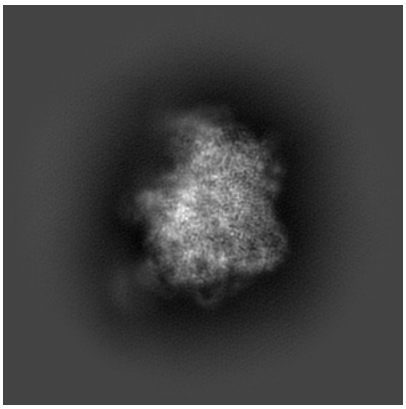
6.1.1 Primary map



X

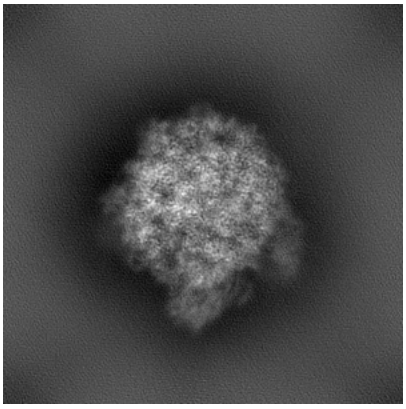


Y

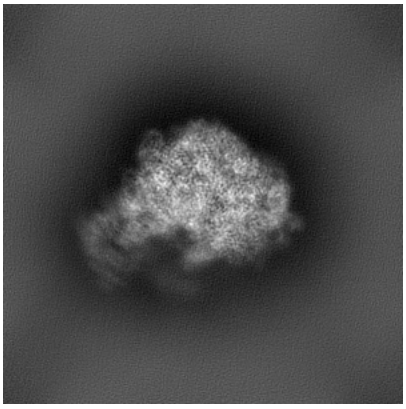


Z

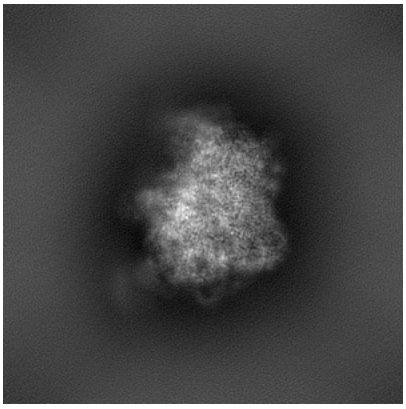
6.1.2 Raw map



X



Y

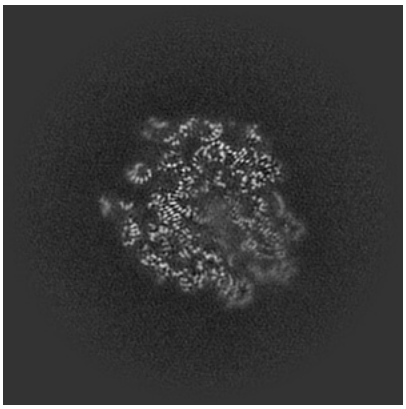


Z

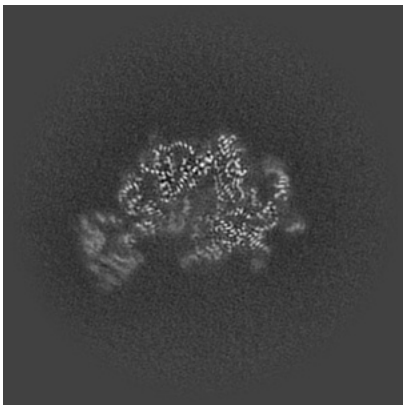
The images above show the map projected in three orthogonal directions.

6.2 Central slices (i)

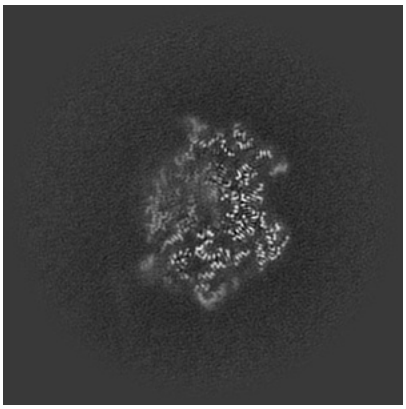
6.2.1 Primary map



X Index: 150

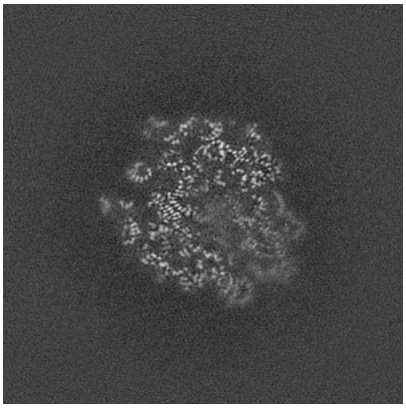


Y Index: 150

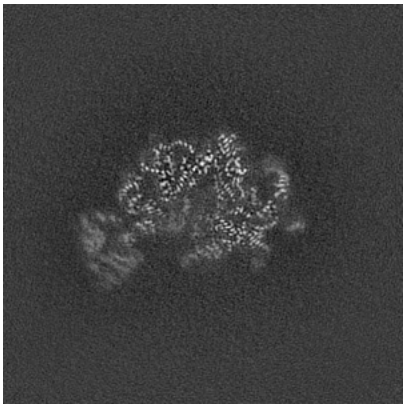


Z Index: 150

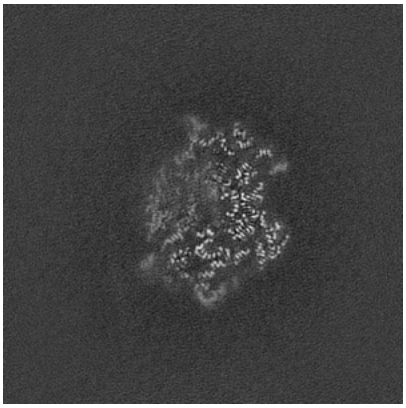
6.2.2 Raw map



X Index: 150



Y Index: 150

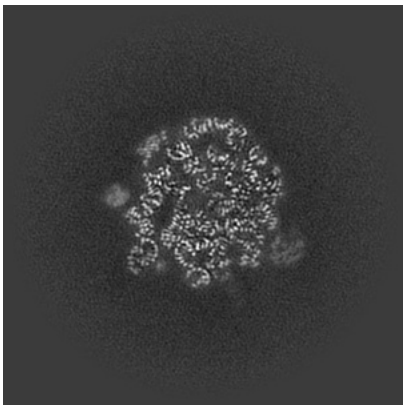


Z Index: 150

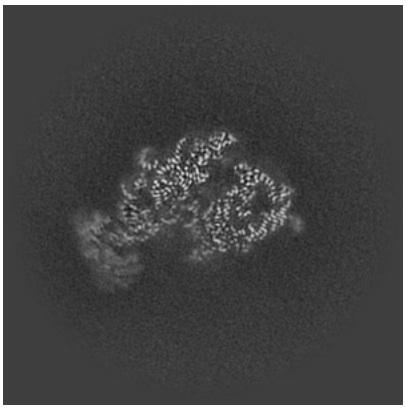
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

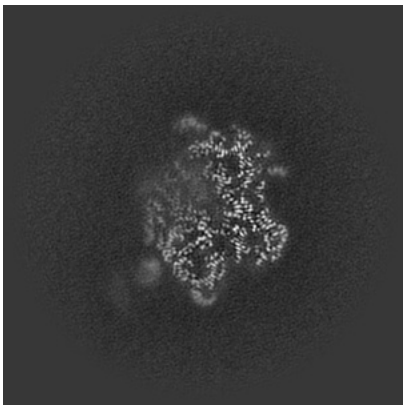
6.3.1 Primary map



X Index: 163

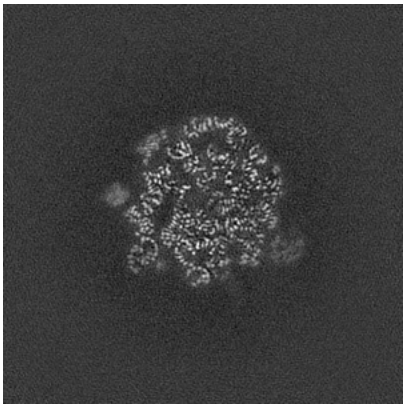


Y Index: 142

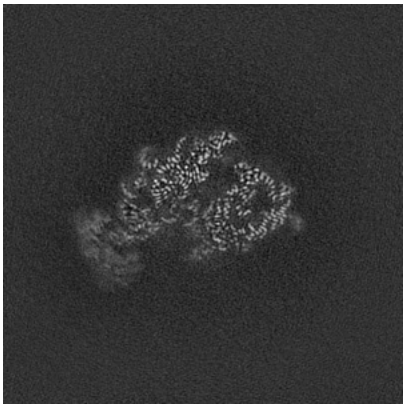


Z Index: 146

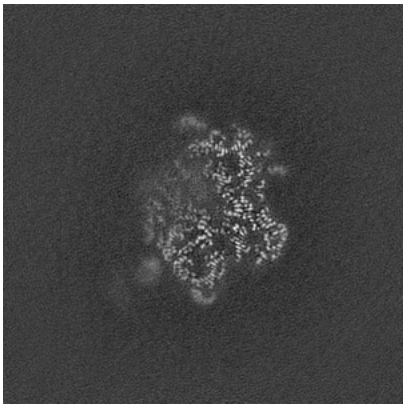
6.3.2 Raw map



X Index: 163



Y Index: 142

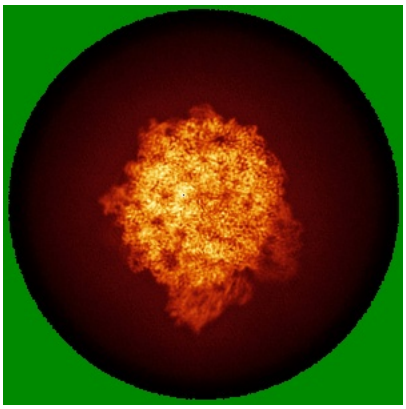


Z Index: 146

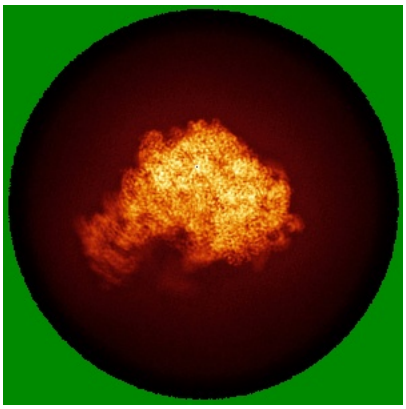
The images above show the largest variance slices of the map in three orthogonal directions.

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

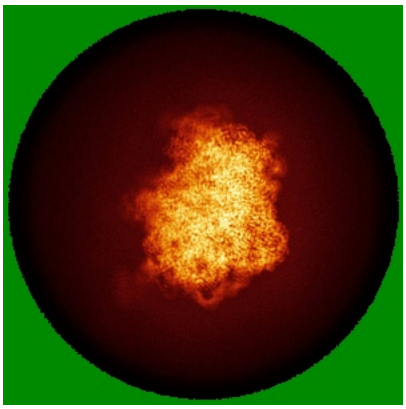
6.4.1 Primary map



X

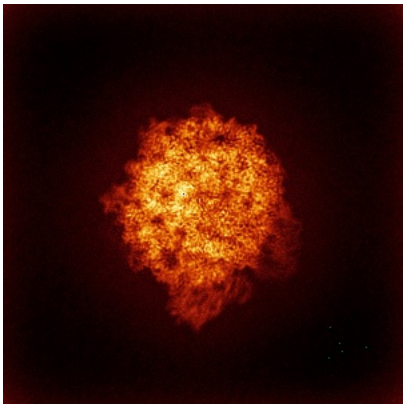


Y

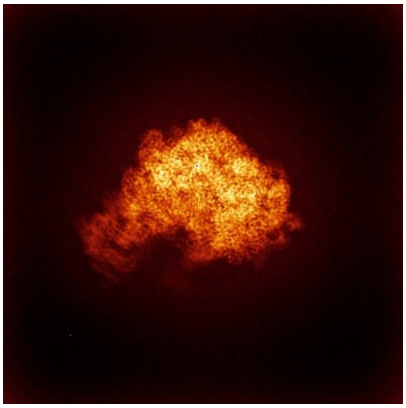


Z

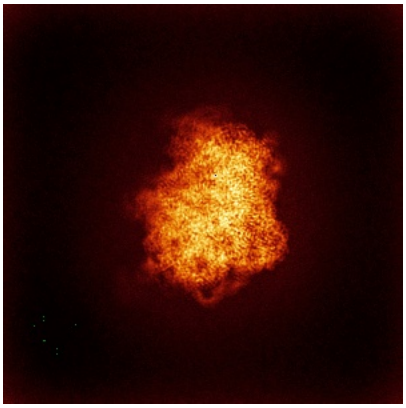
6.4.2 Raw map



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

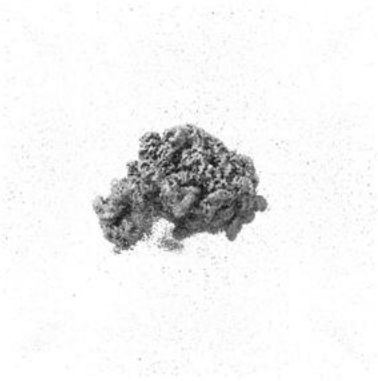
Y

Z

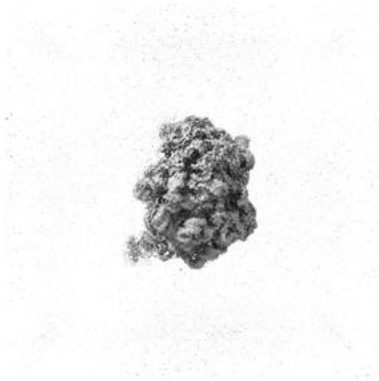
The images above show the 3D surface view of the map at the recommended contour level 0.067. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

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.

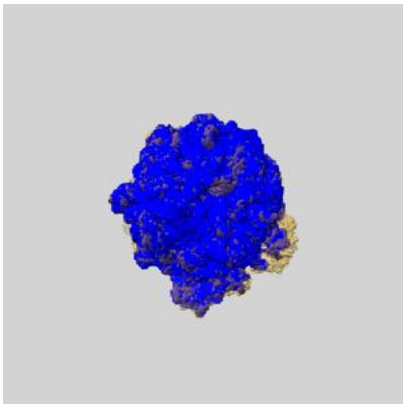
6.6 Mask visualisation (i)

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

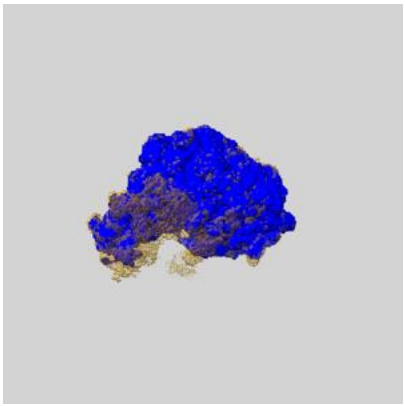
A mask typically either:

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

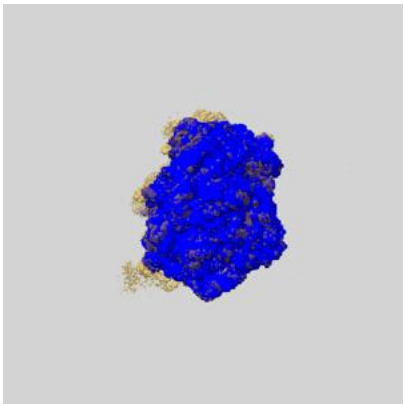
6.6.1 emd_51981_msk_1.map (i)



X



Y

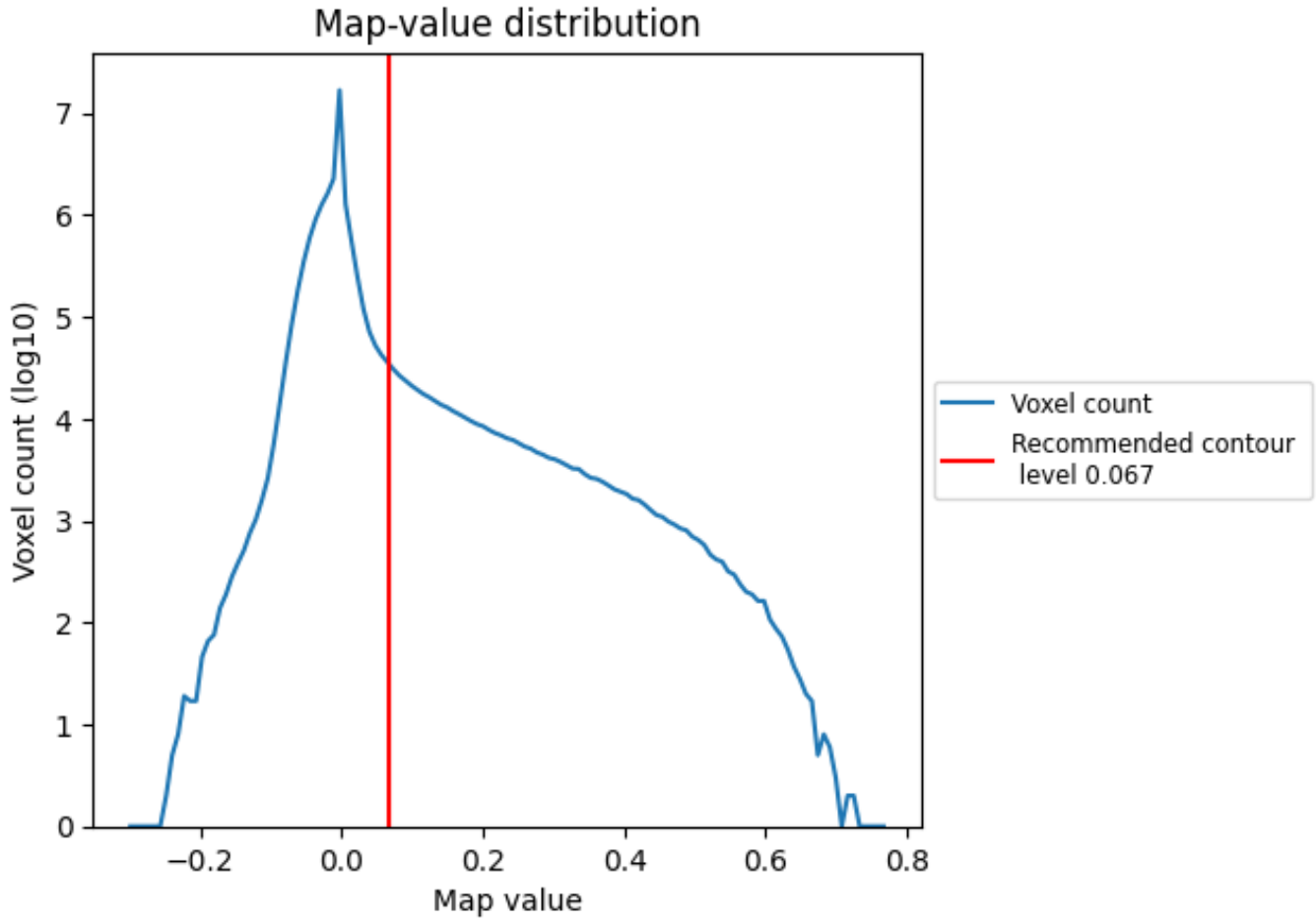


Z

7 Map analysis

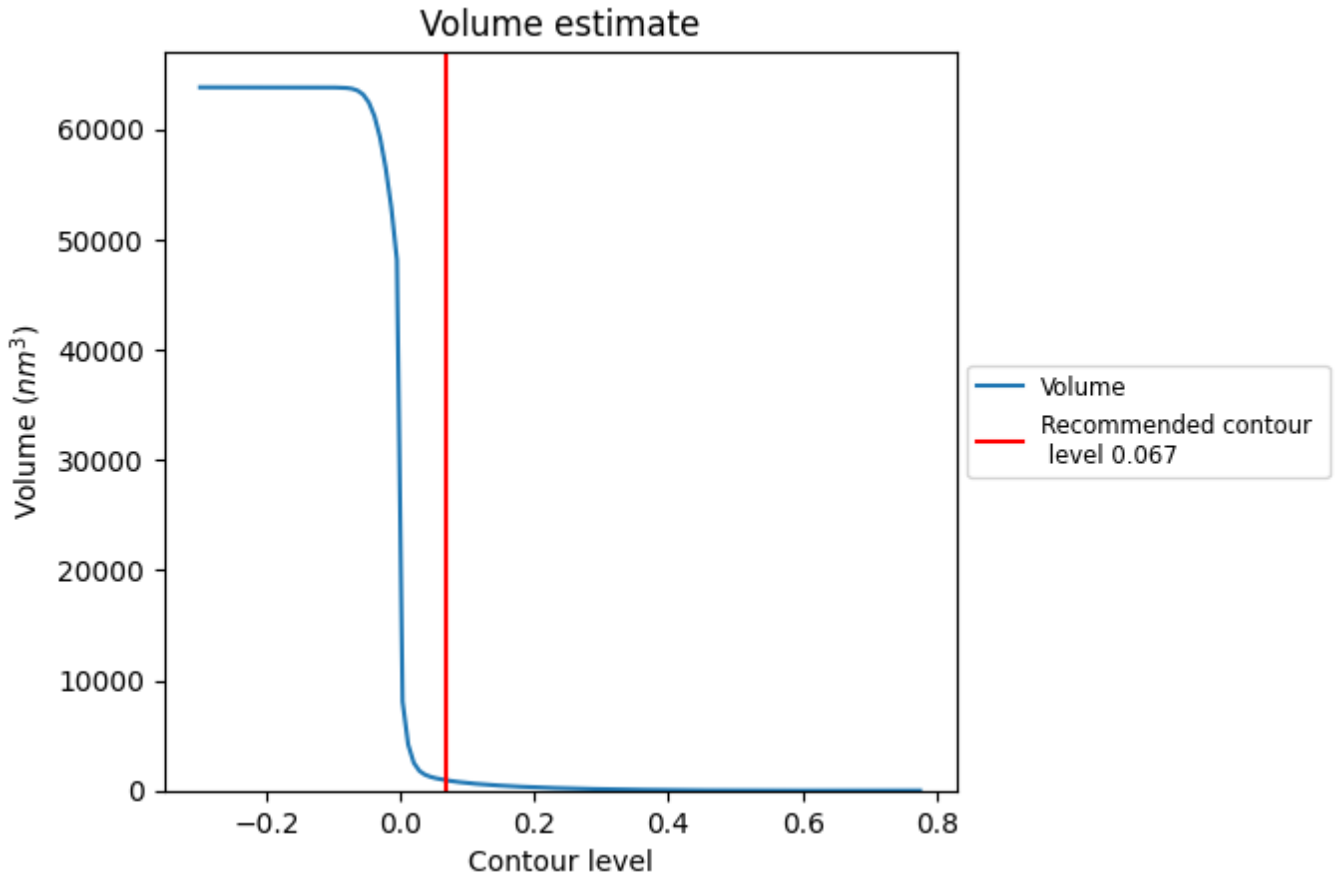
This section contains the results of statistical analysis of the map.

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.

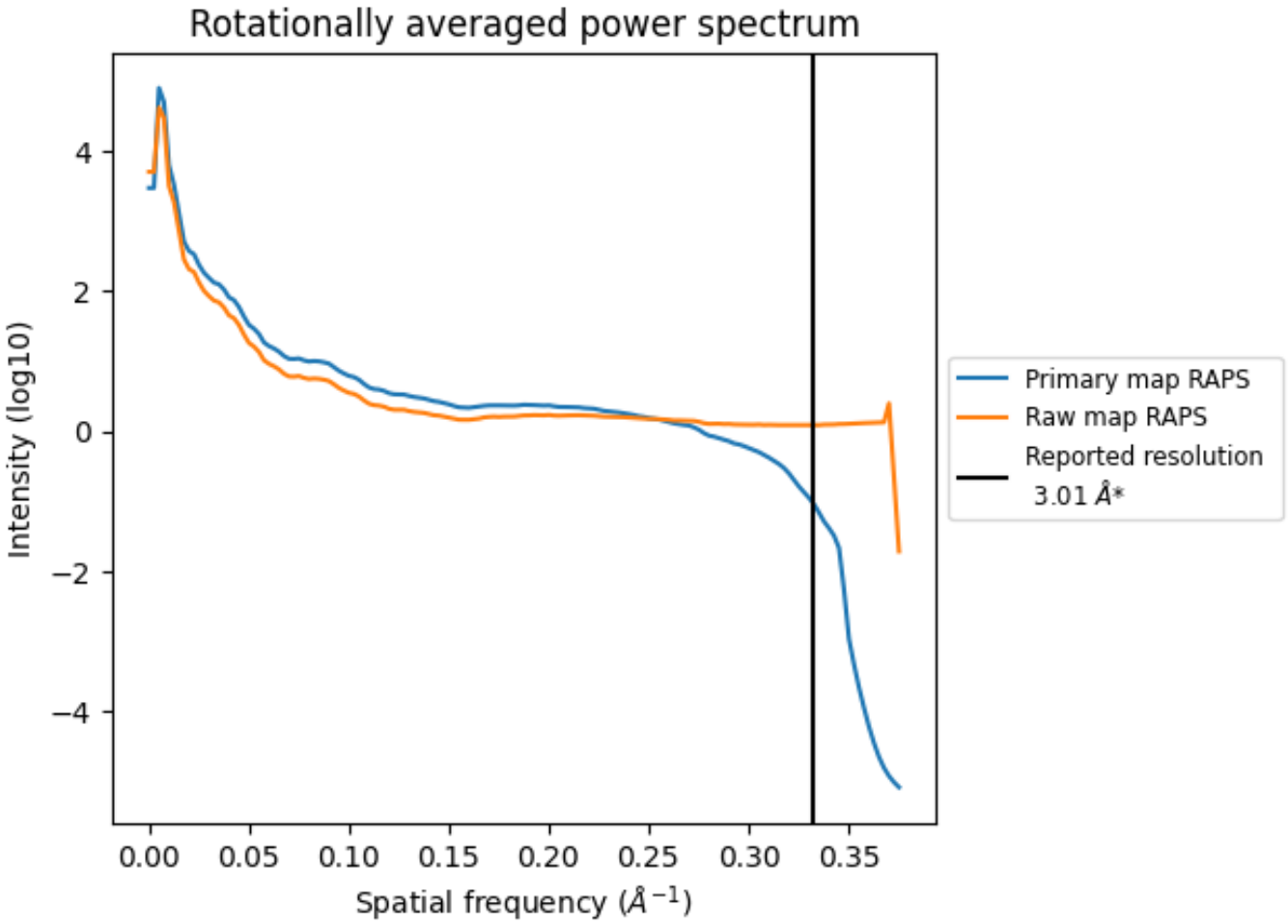
7.2 Volume estimate (i)



The volume at the recommended contour level is 948 nm^3; this corresponds to an approximate mass of 857 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)

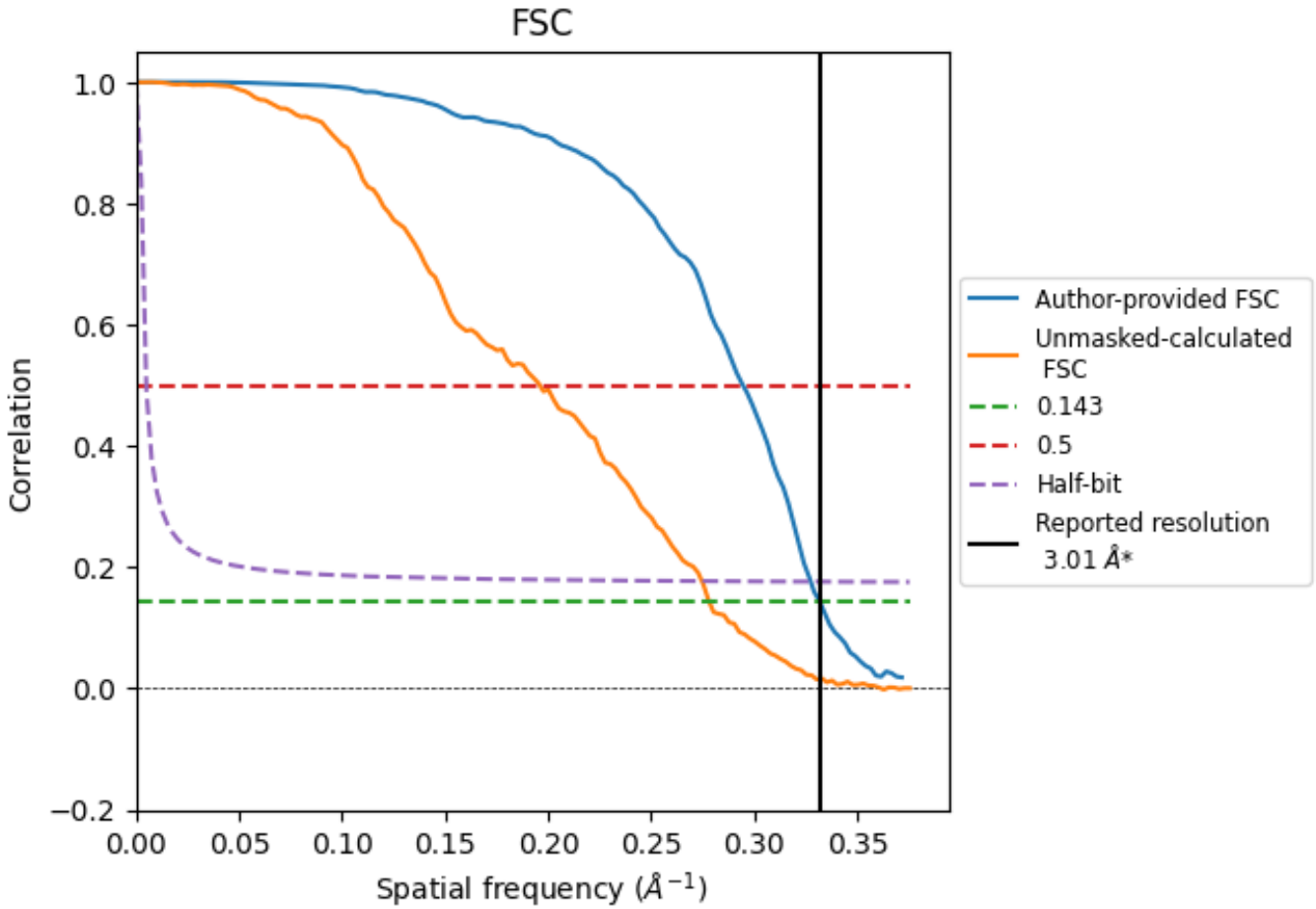


*Reported resolution corresponds to spatial frequency of 0.332 Å^{-1}

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 0.332 Å^{-1}

8.2 Resolution estimates (i)

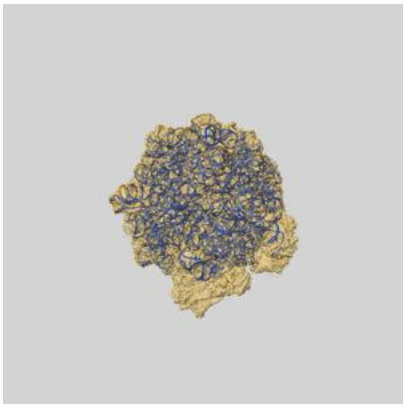
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.01	-	-
Author-provided FSC curve	3.01	3.40	3.05
Unmasked-calculated*	3.60	5.10	3.64

*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 3.60 differs from the reported value 3.01 by more than 10 %

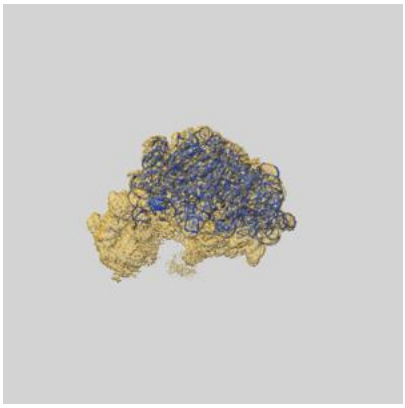
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-51981 and PDB model 9HAI. Per-residue inclusion information can be found in section 3 on page 7.

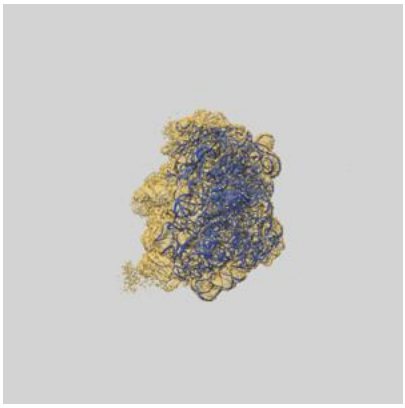
9.1 Map-model overlay



X



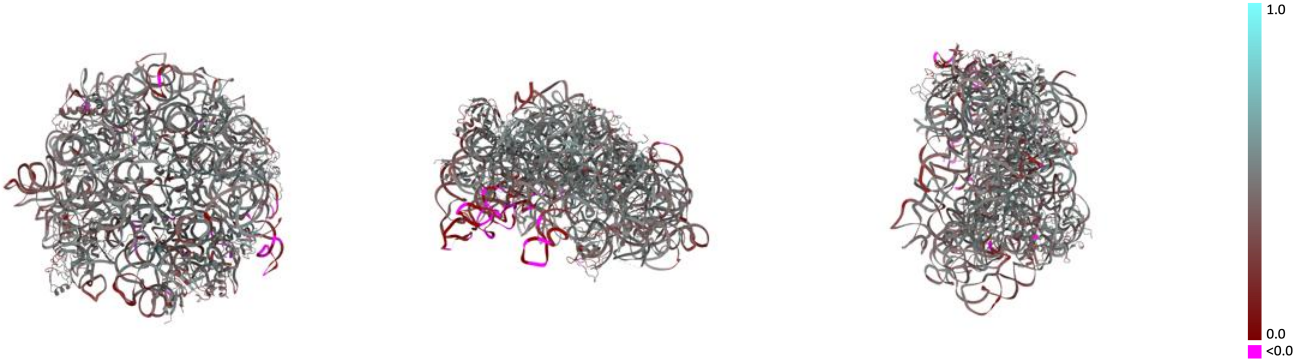
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.067 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



X Y Z

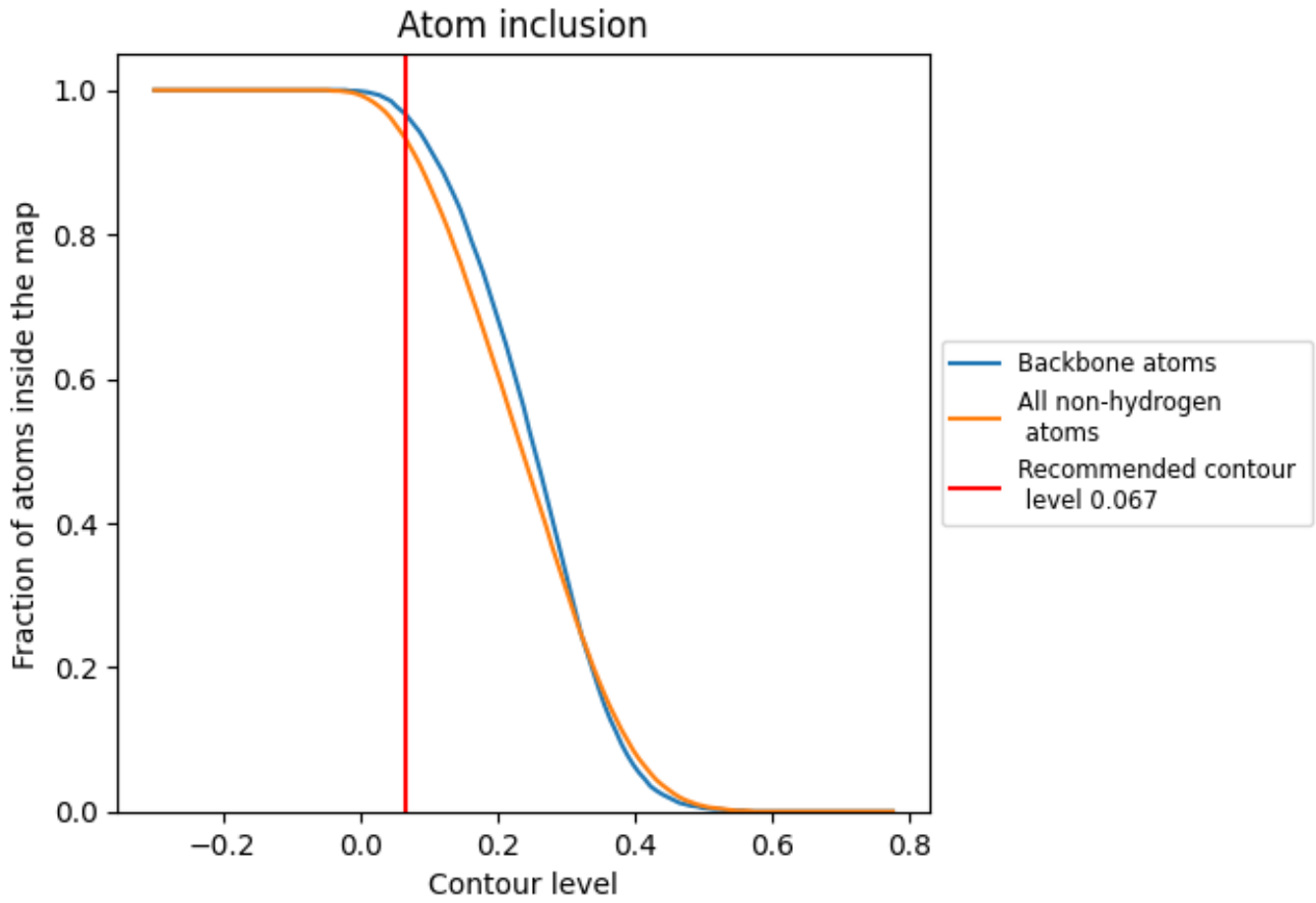
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions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

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 (0.067).

9.4 Atom inclusion (i)



At the recommended contour level, 97% of all backbone atoms, 93% 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 (0.067) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.9320	0.4240
0	0.8150	0.4450
2	0.9070	0.4860
A	0.9520	0.4190
D	0.9000	0.4680
E	0.8530	0.4340
J	0.9130	0.4730
K	0.8290	0.3870
L	0.8520	0.4340
N	0.9200	0.4650
P	0.8400	0.4050
Q	0.9240	0.4610
R	0.8660	0.4200
S	0.8300	0.4520
T	0.8770	0.4180
U	0.8790	0.4330
Y	0.8480	0.3730
Z	0.8880	0.4760
y	0.5540	0.2620