



## wwPDB EM Validation Summary Report ⓘ

Oct 12, 2024 – 08:38 PM EDT

PDB ID : 6C0F  
EMDB ID : EMD-7324  
Title : Yeast nucleolar pre-60S ribosomal subunit (state 2)  
Authors : Sanghai, Z.A.; Miller, L.; Barandun, J.; Hunziker, M.; Chaker-Margot, M.;  
Klinge, S.  
Deposited on : 2017-12-29  
Resolution : 3.70 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](mailto: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>.

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

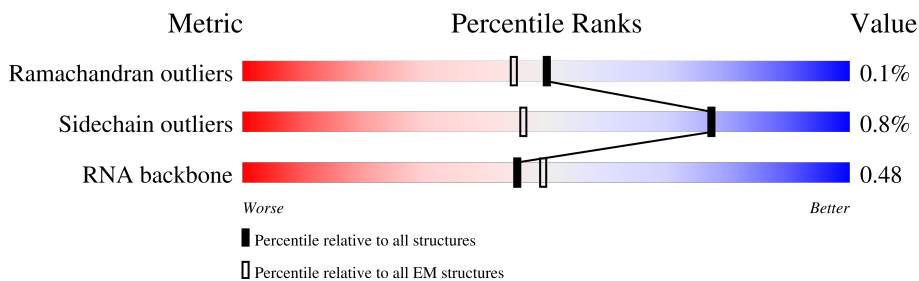
EMDB validation analysis : 0.0.1.dev113  
MolProbity : 4.02b-467  
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)  
MapQ : 1.9.13  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.39

# 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 3.70 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.



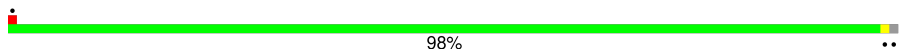

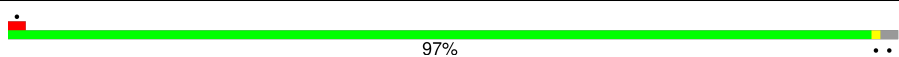
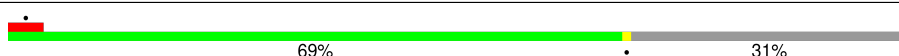


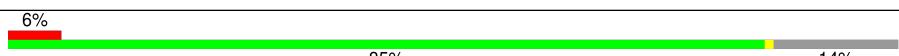
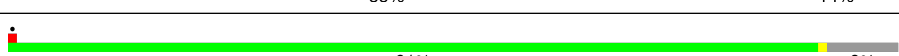
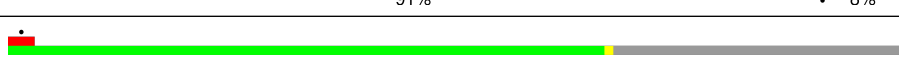

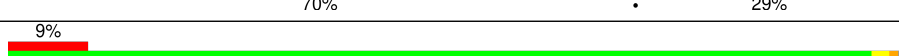
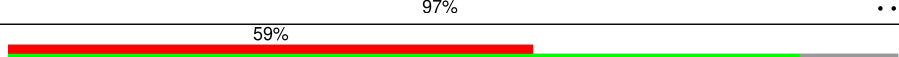
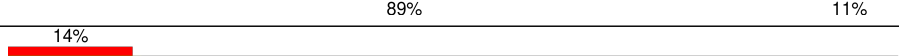
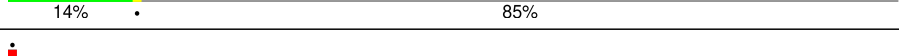
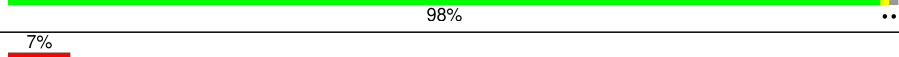




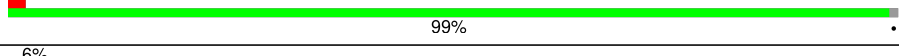
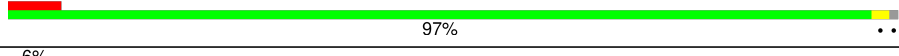
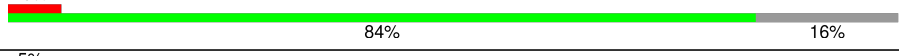

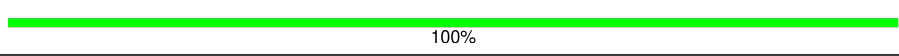
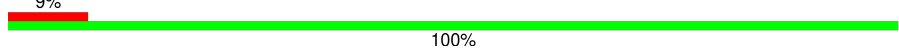
Metric	Whole archive (#Entries)	EM structures (#Entries)
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415
RNA backbone	6643	2191

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  $\geq 3$ , 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	1	3395	
2	2	158	
3	6	232	
4	A	463	
5	B	387	
6	C	362	
7	D	306	
8	E	176	




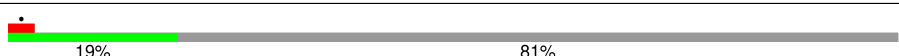
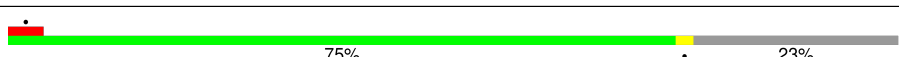
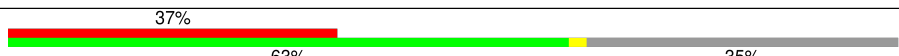
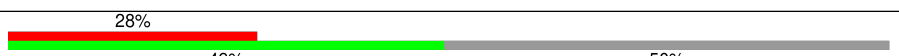


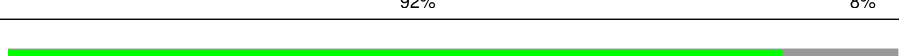
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Mol	Chain	Length	Quality of chain
9	F	244	 98%
10	G	256	 71% 27%
11	I	295	 97%
12	K	376	 69% 31%
13	L	199	 51% 47%
14	M	138	 93% 7%
15	N	204	 85% 14%
16	O	199	 91% 8%
17	P	184	 67% 33%
18	Q	186	 70% 29%
19	S	172	 97%
20	V	137	 89% 11%
21	W	647	 85%
22	Y	127	 98%
23	7	231	 67% 32%
24	8	434	 77%
25	b	291	 82% 17%
26	e	130	 88% 12%
27	f	107	 99%
28	h	120	 97%
29	i	100	 84% 16%
30	j	88	 81% 18%
31	x	28	 100%
32	m	74	 100%
33	n	605	 56% 44%

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Mol	Chain	Length	Quality of chain
34	o	220	 60% 40%
35	p	505	 14% 86% 13%
36	q	285	 100% 100%
37	s	807	 19% 81%
38	t	322	 75% 23%
39	u	199	 37% 63% 35%
40	v	453	 28% 49% 50%
41	w	250	 18% 28% 72%
42	y	245	 55% 92% 8%
43	z	278	 87% 13%

## 2 Entry composition

There are 44 unique types of molecules in this entry. The entry contains 91742 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 *Saccharomyces cerevisiae* S288c 35S pre-ribosomal RNA miscRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
1	1	1357	29055	12970	5242	9486	1357	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
1	?	-	U	deletion	GB 259147931

- Molecule 2 is a RNA chain called 5.8S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
2	2	158	3353	1500	586	1109	158	0	0

- Molecule 3 is a RNA chain called ITS2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
3	6	87	1838	823	309	619	87	0	0

- Molecule 4 is a protein called Ribosome biogenesis protein NSA1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	A	394	3126	1997	525	593	11	0	0

- Molecule 5 is a protein called 60S ribosomal protein L3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	B	324	2577	1635	478	458	6	0	0

- Molecule 6 is a protein called 60S ribosomal protein L4-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	C	314	2418	1531	454	430	3	0	0

- Molecule 7 is a protein called Protein MAK16.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
7	D	190	1578	996	297	275	10	0	0

- Molecule 8 is a protein called 60S ribosomal protein L6-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
8	E	170	1366	882	244	239	1	0	0

- Molecule 9 is a protein called 60S ribosomal protein L7-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
9	F	242	1941	1249	352	339	1	0	0

- Molecule 10 is a protein called 60S ribosomal protein L8-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
10	G	187	1453	934	253	264	2	0	0

- Molecule 11 is a protein called Ribosome production factor 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
11	I	288	2429	1544	439	442	4	0	0

- Molecule 12 is a protein called Proteasome-interacting protein CIC1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
12	K	260	2099	1352	346	398	3	0	0

- Molecule 13 is a protein called 60S ribosomal protein L13-A.

Mol	Chain	Residues	Atoms				AltConf	Trace
13	L	106	Total	C	N	O	0	0
			845	531	174	140		

- Molecule 14 is a protein called 60S ribosomal protein L14-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	M	128	Total	C	N	O	S	0	0
			997	641	190	164	2		

- Molecule 15 is a protein called 60S ribosomal protein L15-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	N	176	Total	C	N	O	S	0	0
			1509	946	319	243	1		

- Molecule 16 is a protein called 60S ribosomal protein L16-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	O	184	Total	C	N	O	S	0	0
			1451	936	268	246	1		

- Molecule 17 is a protein called 60S ribosomal protein L17-A.

Mol	Chain	Residues	Atoms				AltConf	Trace
17	P	124	Total	C	N	O	0	0
			975	612	184	179		

- Molecule 18 is a protein called 60S ribosomal protein L18-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
18	Q	132	Total	C	N	O	S	0	0
			1015	648	191	175	1		

- Molecule 19 is a protein called 60S ribosomal protein L20-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
19	S	171	Total	C	N	O	S	0	0
			1437	925	266	243	3		

- Molecule 20 is a protein called 60S ribosomal protein L23-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
20	V	122	903	567	169	160	7	0	0

- Molecule 21 is a protein called Nucleolar GTP-binding protein 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
21	W	98	806	509	132	164	1	0	0

- Molecule 22 is a protein called 60S ribosomal protein L26-A.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
22	Y	126	993	625	192	176	0	0

- Molecule 23 is a protein called Nucleolar protein 16.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
23	7	156	1295	813	250	228	4	0	0

- Molecule 24 is a protein called Ribosomal RNA-processing protein 14.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
24	8	98	836	515	165	154	2	0	0

- Molecule 25 is a protein called Ribosome biogenesis protein BRX1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
25	b	242	1919	1221	344	350	4	0	0

- Molecule 26 is a protein called 60S ribosomal protein L32.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
26	e	114	914	580	181	152	1	0	0

- Molecule 27 is a protein called 60S ribosomal protein L33-A.



Mol	Chain	Residues	Atoms					AltConf	Trace
27	f	106	Total	C	N	O	S	0	0
			850	540	165	144	1		

- Molecule 28 is a protein called 60S ribosomal protein L35-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
28	h	119	Total	C	N	O	S	0	0
			969	615	186	167	1		

- Molecule 29 is a protein called 60S ribosomal protein L36-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
29	i	84	Total	C	N	O	S	0	0
			665	413	136	114	2		

- Molecule 30 is a protein called 60S ribosomal protein L37-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
30	j	72	Total	C	N	O	S	0	0
			575	350	125	95	5		

- Molecule 31 is a protein called Brx1-associated peptide.

Mol	Chain	Residues	Atoms				AltConf	Trace
31	x	28	Total	C	N	O	0	0
			140	84	28	28		

- Molecule 32 is a protein called rRNA-processing protein EBP2.

Mol	Chain	Residues	Atoms				AltConf	Trace
32	m	74	Total	C	N	O	0	0
			370	222	74	74		

- Molecule 33 is a protein called Pescadillo homolog.

Mol	Chain	Residues	Atoms					AltConf	Trace
33	n	341	Total	C	N	O	S	0	0
			2794	1823	470	492	9		

- Molecule 34 is a protein called Ribosome biogenesis protein 15.

Mol	Chain	Residues	Atoms					AltConf	Trace
34	o	133	Total	C	N	O	S	0	0
			1107	716	198	189	4		

- Molecule 35 is a protein called ATP-dependent RNA helicase HAS1.

Mol	Chain	Residues	Atoms					AltConf	Trace
35	p	437	Total	C	N	O	S	0	0
			3486	2247	600	627	12		

- Molecule 36 is a protein called Protein MAK11.

Mol	Chain	Residues	Atoms				AltConf	Trace
36	q	285	Total	C	N	O	0	0
			1409	839	285	285		

- Molecule 37 is a protein called Ribosome biogenesis protein ERB1.

Mol	Chain	Residues	Atoms					AltConf	Trace
37	s	157	Total	C	N	O	S	0	0
			1069	672	203	191	3		

- Molecule 38 is a protein called Ribosome biogenesis protein RLP7.

Mol	Chain	Residues	Atoms					AltConf	Trace
38	t	248	Total	C	N	O	S	0	0
			1965	1254	350	358	3		

- Molecule 39 is a protein called Ribosome biogenesis protein RLP24.

Mol	Chain	Residues	Atoms					AltConf	Trace
39	u	129	Total	C	N	O	S	0	0
			1088	682	220	178	8		

- Molecule 40 is a protein called Ribosome biogenesis protein SSF1.

Mol	Chain	Residues	Atoms					AltConf	Trace
40	v	225	Total	C	N	O	S	0	0
			1795	1142	320	324	9		

- Molecule 41 is a protein called Ribosomal RNA-processing protein 15.

Mol	Chain	Residues	Atoms				AltConf	Trace
41	w	70	Total	C	N	O	0	0
			562	357	96	109		

- Molecule 42 is a protein called Eukaryotic translation initiation factor 6.

Mol	Chain	Residues	Atoms					AltConf	Trace
42	y	226	Total	C	N	O	S	0	0
			1709	1060	296	346	7		

- Molecule 43 is a protein called Ribosomal RNA-processing protein 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
43	z	243	Total	C	N	O	S	0	0
			2058	1334	353	366	5		

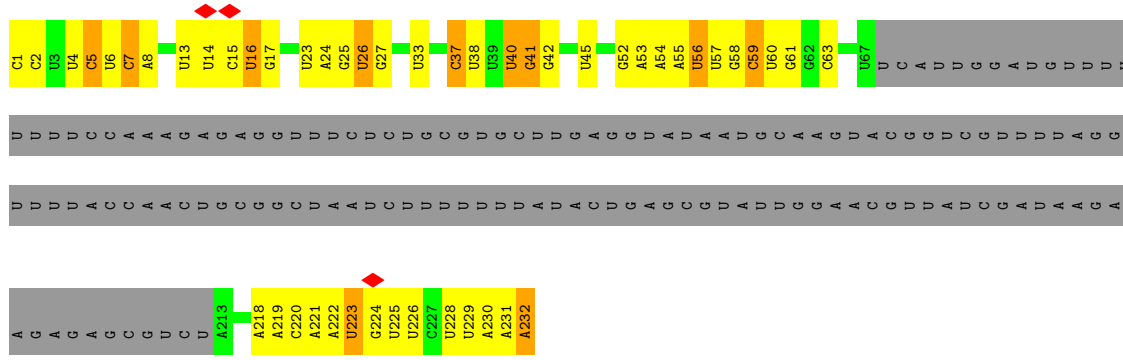
- Molecule 44 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		AltConf
44	D	1	Total	Zn	0
			1	1	
44	j	1	Total	Zn	0
			1	1	
44	u	1	Total	Zn	0
			1	1	

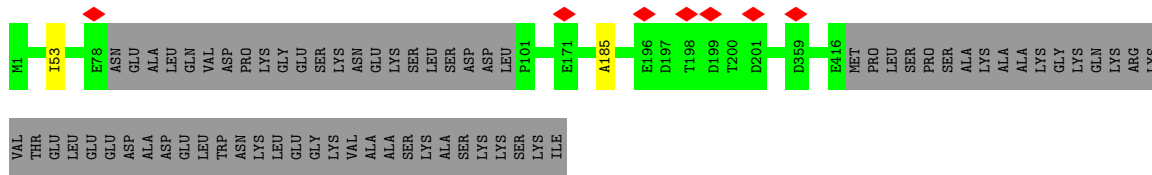
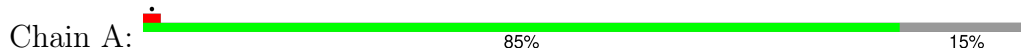




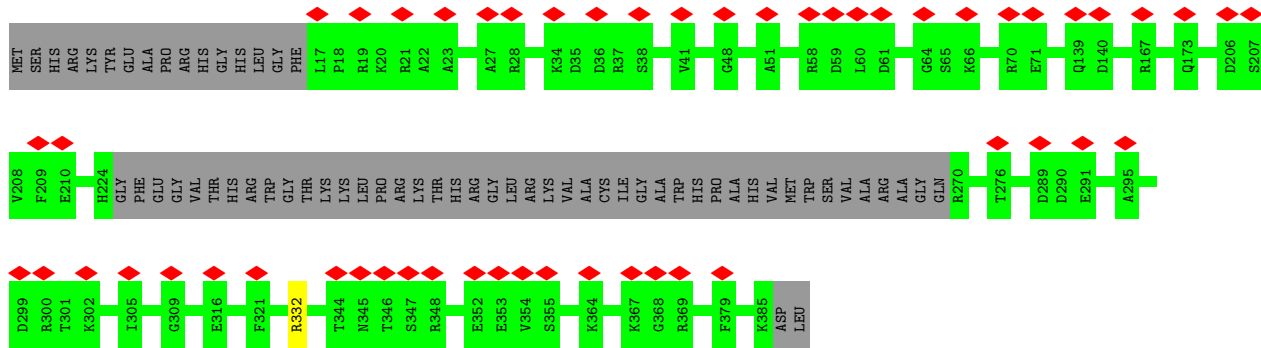
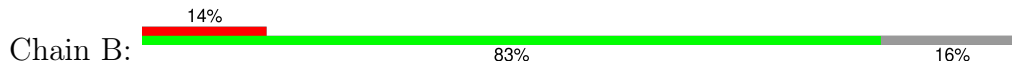




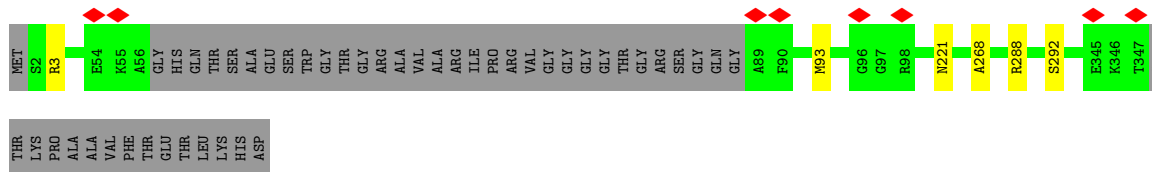
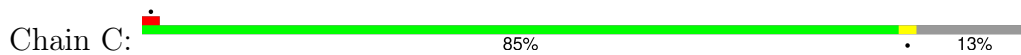
• Molecule 4: Ribosome biogenesis protein NSA1



• Molecule 5: 60S ribosomal protein L3



• Molecule 6: 60S ribosomal protein L4-A



• Molecule 7: Protein MAK16

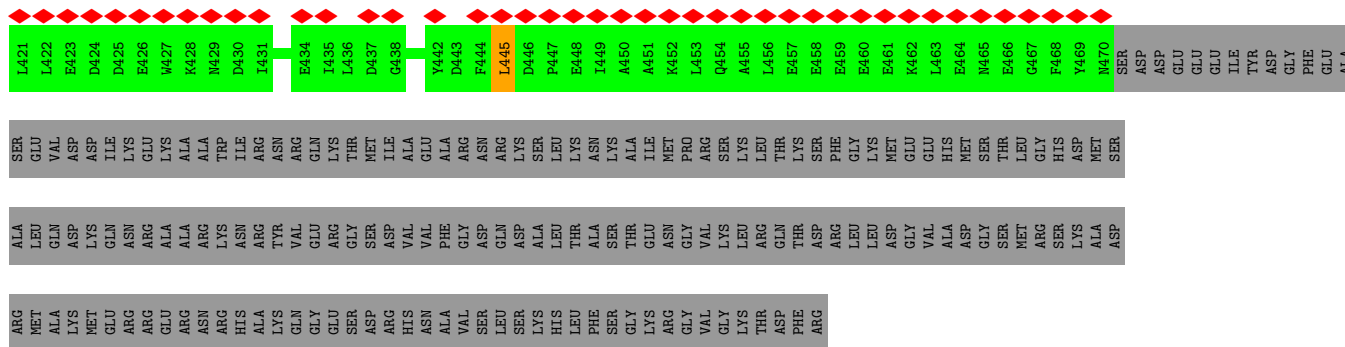




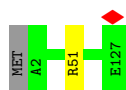




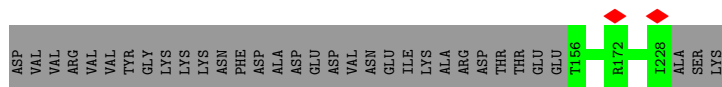
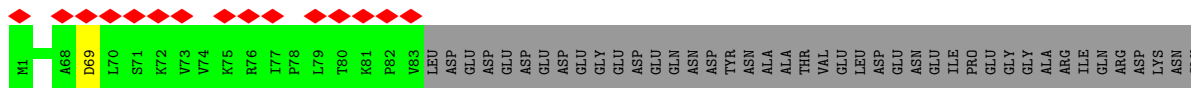




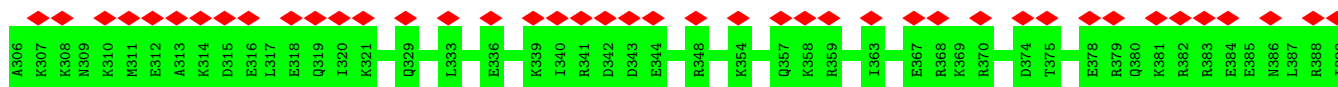
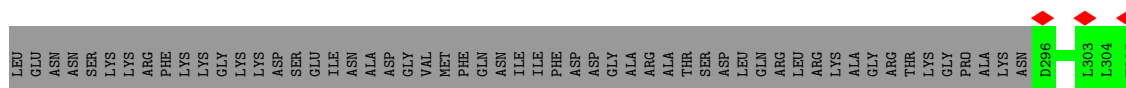
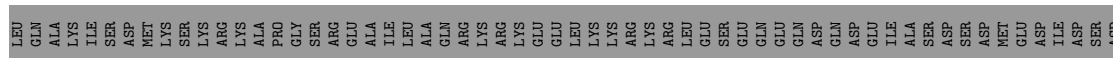
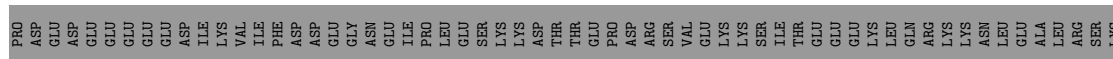
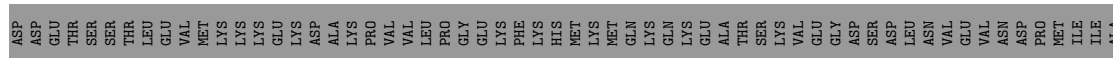
• Molecule 22: 60S ribosomal protein L26-A

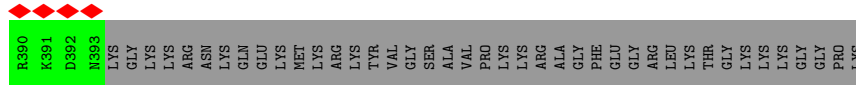


• Molecule 23: Nucleolar protein 16

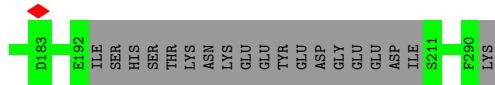
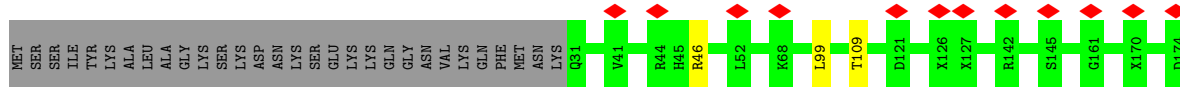
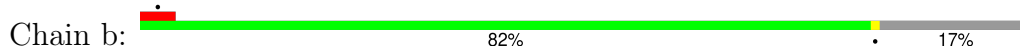


• Molecule 24: Ribosomal RNA-processing protein 14

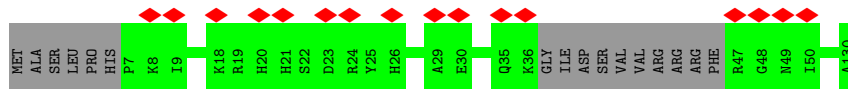
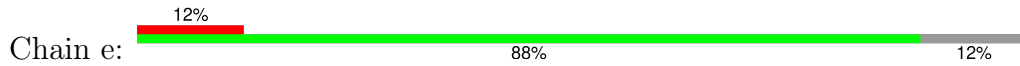




• Molecule 25: Ribosome biogenesis protein BRX1



• Molecule 26: 60S ribosomal protein L32



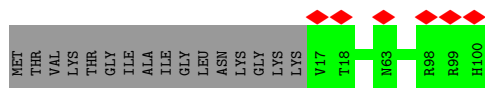
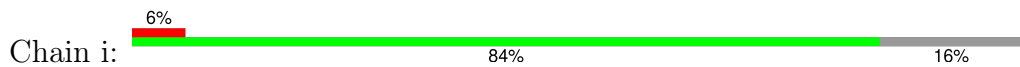
• Molecule 27: 60S ribosomal protein L33-A



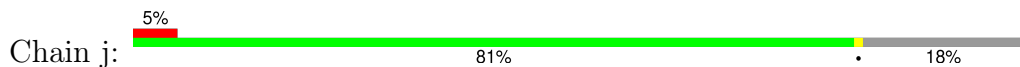
• Molecule 28: 60S ribosomal protein L35-A



• Molecule 29: 60S ribosomal protein L36-A



• Molecule 30: 60S ribosomal protein L37-A



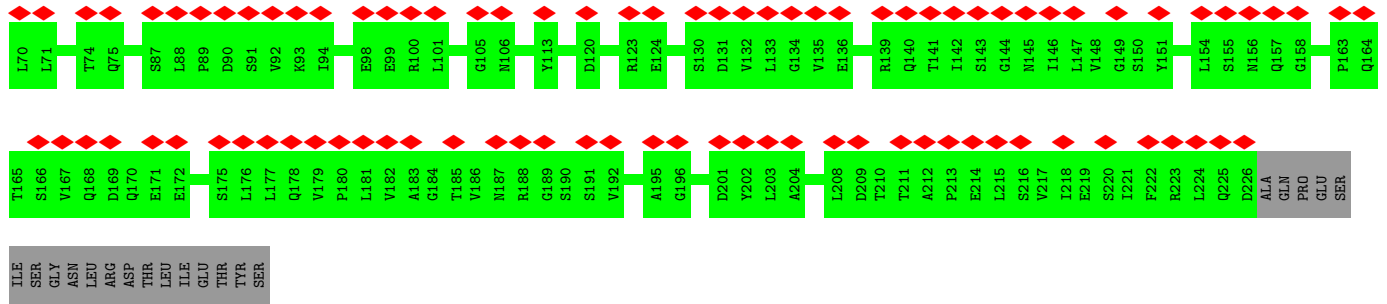




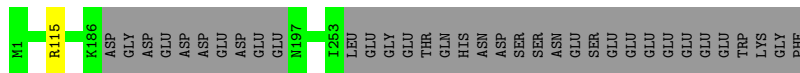
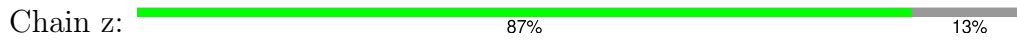








• Molecule 43: Ribosomal RNA-processing protein 1



## 4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	201114	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	NONE	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ( $e^-/\text{\AA}^2$ )	1.56	Depositor
Minimum defocus (nm)	1000	Depositor
Maximum defocus (nm)	3500	Depositor
Magnification	Not provided	
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	0.173	Depositor
Minimum map value	-0.043	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.003	Depositor
Recommended contour level	0.02	Depositor
Map size ( $\text{\AA}$ )	624.0, 624.0, 624.0	wwPDB
Map dimensions	480, 480, 480	wwPDB
Map angles ( $^\circ$ )	90.0, 90.0, 90.0	wwPDB
Pixel spacing ( $\text{\AA}$ )	1.3, 1.3, 1.3	Depositor

## 5 Model quality [i](#)

### 5.1 Standard geometry [i](#)

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

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with  $|Z| > 5$  is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	$\# Z  > 5$	RMSZ	$\# Z  > 5$
1	1	0.72	0/32512	1.16	224/50669 (0.4%)
2	2	0.71	0/3746	1.09	13/5832 (0.2%)
3	6	0.63	0/2050	1.33	34/3186 (1.1%)
4	A	0.39	0/3182	0.59	0/4288
5	B	0.34	0/2628	0.58	0/3529
6	C	0.41	0/2462	0.60	0/3333
7	D	0.44	0/1609	0.55	0/2157
8	E	0.39	0/1390	0.56	0/1866
9	F	0.37	0/1979	0.58	0/2661
10	G	0.39	0/1477	0.67	0/1994
11	I	0.41	0/2476	0.58	0/3323
12	K	0.35	0/2133	0.59	1/2879 (0.0%)
13	L	0.42	0/858	0.64	2/1154 (0.2%)
14	M	0.36	0/1012	0.53	0/1362
15	N	0.42	0/1540	0.55	0/2060
16	O	0.37	0/1476	0.52	0/1980
17	P	0.35	0/991	0.50	0/1334
18	Q	0.39	0/1030	0.59	0/1393
19	S	0.37	0/1473	0.57	1/1980 (0.1%)
20	V	0.29	0/917	0.50	0/1235
21	W	0.32	0/821	0.51	1/1106 (0.1%)
22	Y	0.40	0/1004	0.60	0/1341
23	7	0.40	0/1312	0.62	1/1744 (0.1%)
24	8	0.28	0/840	0.42	0/1105
25	b	0.36	0/1868	0.58	0/2522
26	e	0.36	0/931	0.53	0/1243
27	f	0.42	0/868	0.57	0/1168
28	h	0.36	0/978	0.62	1/1301 (0.1%)
29	i	0.34	0/672	0.57	0/894
30	j	0.34	0/587	0.54	0/778
33	n	0.36	0/2862	0.56	0/3870
34	o	0.37	0/1129	0.54	0/1502

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z  >5	RMSZ	# Z  >5
35	p	0.37	0/3552	0.61	0/4789
37	s	0.40	0/720	0.55	0/964
38	t	0.36	0/1991	0.61	0/2679
39	u	0.34	0/1109	0.50	0/1474
40	v	0.31	0/1825	0.62	1/2453 (0.0%)
41	w	0.29	0/563	0.51	0/748
42	y	0.31	0/1730	0.58	0/2354
43	z	0.40	0/2104	0.55	0/2832
All	All	0.54	0/94407	0.88	279/135082 (0.2%)

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
4	A	0	2
7	D	0	1
9	F	0	1
10	G	0	1
19	S	0	4
28	h	0	1
33	n	0	1
36	q	0	1
37	s	0	1
38	t	0	3
All	All	0	16

There are no bond length outliers.

The worst 5 of 279 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	1	3217	C	N1-C2-O2	13.30	126.88	118.90
1	1	3217	C	N3-C2-O2	-10.79	114.35	121.90
1	1	3217	C	C2-N1-C1'	10.48	130.33	118.80
1	1	406	G	O4'-C1'-N9	9.94	116.15	108.20
1	1	3058	U	N1-C2-O2	9.91	129.74	122.80

There are no chirality outliers.

5 of 16 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
4	A	185	ALA	Peptide
4	A	53	ILE	Peptide
7	D	56	ASP	Peptide
9	F	158	LYS	Peptide
10	G	76	ALA	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	
4	A	390/463 (84%)	368 (94%)	22 (6%)	0	100	100
5	B	320/387 (83%)	302 (94%)	18 (6%)	0	100	100
6	C	310/362 (86%)	285 (92%)	23 (7%)	2 (1%)	22	54
7	D	188/306 (61%)	177 (94%)	11 (6%)	0	100	100
8	E	168/176 (96%)	158 (94%)	10 (6%)	0	100	100
9	F	240/244 (98%)	225 (94%)	15 (6%)	0	100	100
10	G	185/256 (72%)	170 (92%)	14 (8%)	1 (0%)	25	57
11	I	286/295 (97%)	272 (95%)	14 (5%)	0	100	100
12	K	256/376 (68%)	243 (95%)	13 (5%)	0	100	100
13	L	104/199 (52%)	96 (92%)	7 (7%)	1 (1%)	13	44
14	M	126/138 (91%)	123 (98%)	3 (2%)	0	100	100
15	N	172/204 (84%)	162 (94%)	10 (6%)	0	100	100
16	O	180/199 (90%)	173 (96%)	7 (4%)	0	100	100
17	P	118/184 (64%)	113 (96%)	5 (4%)	0	100	100
18	Q	130/186 (70%)	128 (98%)	2 (2%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
19	S	169/172 (98%)	154 (91%)	15 (9%)	0	100	100
20	V	120/137 (88%)	115 (96%)	5 (4%)	0	100	100
21	W	96/647 (15%)	94 (98%)	2 (2%)	0	100	100
22	Y	124/127 (98%)	118 (95%)	6 (5%)	0	100	100
23	7	152/231 (66%)	137 (90%)	15 (10%)	0	100	100
24	8	96/434 (22%)	96 (100%)	0	0	100	100
25	b	220/291 (76%)	207 (94%)	13 (6%)	0	100	100
26	e	110/130 (85%)	106 (96%)	4 (4%)	0	100	100
27	f	104/107 (97%)	99 (95%)	5 (5%)	0	100	100
28	h	117/120 (98%)	111 (95%)	6 (5%)	0	100	100
29	i	82/100 (82%)	78 (95%)	4 (5%)	0	100	100
30	j	70/88 (80%)	66 (94%)	4 (6%)	0	100	100
33	n	333/605 (55%)	322 (97%)	11 (3%)	0	100	100
34	o	131/220 (60%)	123 (94%)	8 (6%)	0	100	100
35	p	433/505 (86%)	422 (98%)	11 (2%)	0	100	100
37	s	82/807 (10%)	77 (94%)	5 (6%)	0	100	100
38	t	244/322 (76%)	220 (90%)	23 (9%)	1 (0%)	30	62
39	u	127/199 (64%)	127 (100%)	0	0	100	100
40	v	221/453 (49%)	207 (94%)	14 (6%)	0	100	100
41	w	68/250 (27%)	64 (94%)	4 (6%)	0	100	100
42	y	224/245 (91%)	214 (96%)	10 (4%)	0	100	100
43	z	239/278 (86%)	228 (95%)	11 (5%)	0	100	100
All	All	6735/10443 (64%)	6380 (95%)	350 (5%)	5 (0%)	50	78

All (5) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
6	C	268	ALA
6	C	292	SER
13	L	63	VAL
10	G	127	PRO
38	t	56	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	
4	A	352/410 (86%)	352 (100%)	0	100	100
5	B	272/323 (84%)	271 (100%)	1 (0%)	89	93
6	C	257/289 (89%)	253 (98%)	4 (2%)	58	74
7	D	171/274 (62%)	170 (99%)	1 (1%)	84	90
8	E	149/153 (97%)	148 (99%)	1 (1%)	81	88
9	F	204/205 (100%)	203 (100%)	1 (0%)	86	92
10	G	152/208 (73%)	150 (99%)	2 (1%)	65	77
11	I	271/276 (98%)	268 (99%)	3 (1%)	70	80
12	K	241/346 (70%)	240 (100%)	1 (0%)	89	93
13	L	85/159 (54%)	84 (99%)	1 (1%)	67	79
14	M	100/109 (92%)	100 (100%)	0	100	100
15	N	153/176 (87%)	151 (99%)	2 (1%)	65	77
16	O	150/162 (93%)	148 (99%)	2 (1%)	65	77
17	P	100/146 (68%)	99 (99%)	1 (1%)	73	82
18	Q	108/151 (72%)	106 (98%)	2 (2%)	52	70
19	S	155/156 (99%)	153 (99%)	2 (1%)	65	77
20	V	94/105 (90%)	94 (100%)	0	100	100
21	W	87/573 (15%)	82 (94%)	5 (6%)	17	45
22	Y	109/110 (99%)	108 (99%)	1 (1%)	75	84
23	7	141/205 (69%)	141 (100%)	0	100	100
24	8	90/388 (23%)	90 (100%)	0	100	100
25	b	203/247 (82%)	200 (98%)	3 (2%)	60	75
26	e	97/111 (87%)	97 (100%)	0	100	100
27	f	90/91 (99%)	90 (100%)	0	100	100
28	h	104/105 (99%)	103 (99%)	1 (1%)	73	82
29	i	70/82 (85%)	70 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
30	j	60/71 (84%)	59 (98%)	1 (2%)	56	73
33	n	309/548 (56%)	308 (100%)	1 (0%)	91	94
34	o	118/199 (59%)	118 (100%)	0	100	100
35	p	381/440 (87%)	377 (99%)	4 (1%)	73	82
37	s	77/653 (12%)	76 (99%)	1 (1%)	65	77
38	t	219/287 (76%)	216 (99%)	3 (1%)	62	76
39	u	114/180 (63%)	111 (97%)	3 (3%)	41	61
40	v	208/413 (50%)	208 (100%)	0	100	100
41	w	63/219 (29%)	62 (98%)	1 (2%)	58	74
42	y	194/211 (92%)	194 (100%)	0	100	100
43	z	225/257 (88%)	224 (100%)	1 (0%)	89	93
All	All	5973/9038 (66%)	5924 (99%)	49 (1%)	77	85

5 of 49 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
21	W	445	LEU
33	n	445	ASN
22	Y	51	ARG
25	b	109	THR
35	p	113	ASN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 93 such sidechains are listed below:

Mol	Chain	Res	Type
25	b	158	HIS
35	p	166	ASN
26	e	52	GLN
33	n	189	GLN
35	p	397	ASN

### 5.3.3 RNA [i](#)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	1	1343/3395 (39%)	352 (26%)	28 (2%)
2	2	157/158 (99%)	35 (22%)	3 (1%)

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Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
3	6	85/232 (36%)	44 (51%)	5 (5%)
All	All	1585/3785 (41%)	431 (27%)	36 (2%)

5 of 431 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	1	2	U
1	1	7	C
1	1	12	A
1	1	13	A
1	1	14	U

5 of 36 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
2	2	36	G
3	6	225	U
2	2	123	G
3	6	25	G
1	1	1329	U

## 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](#)

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

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

## 5.7 Other polymers [i](#)

There are no such residues in this entry.

## 5.8 Polymer linkage issues [i](#)

The following chains have linkage breaks:

Mol	Chain	Number of breaks
36	q	5

All chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	q	398:UNK	C	400:UNK	N	14.84
1	q	136:UNK	C	137:UNK	N	9.43
1	q	114:UNK	C	115:UNK	N	7.34
1	q	257:UNK	C	259:UNK	N	6.77
1	q	242:UNK	C	247:UNK	N	4.06

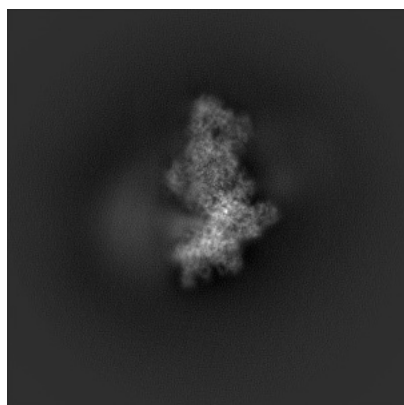
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-7324. These allow visual inspection of the internal detail of the map and identification of artifacts.

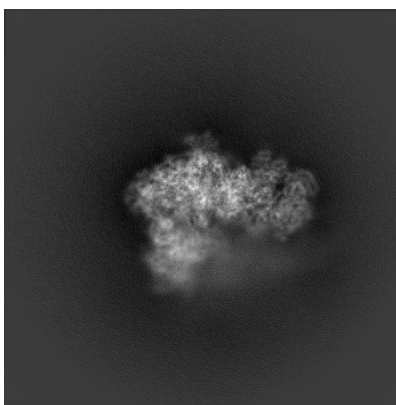
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

### 6.1 Orthogonal projections [i](#)

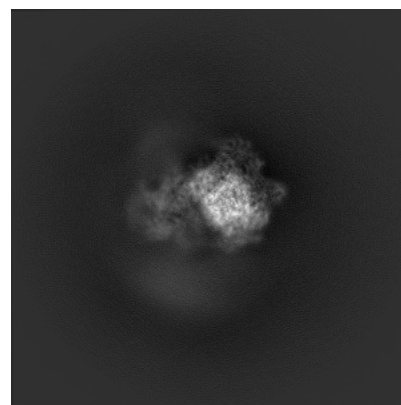
#### 6.1.1 Primary map



X



Y



Z

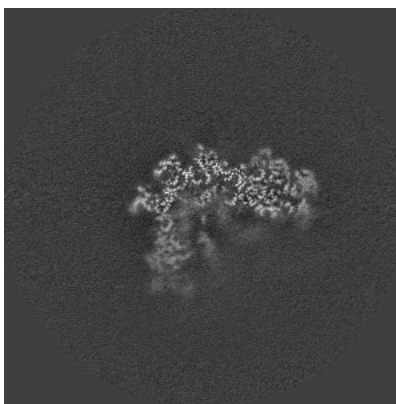
The images above show the map projected in three orthogonal directions.

### 6.2 Central slices [i](#)

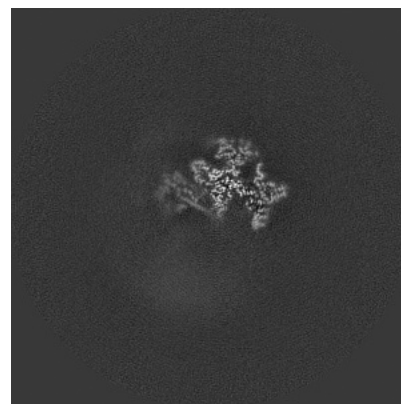
#### 6.2.1 Primary map



X Index: 240



Y Index: 240

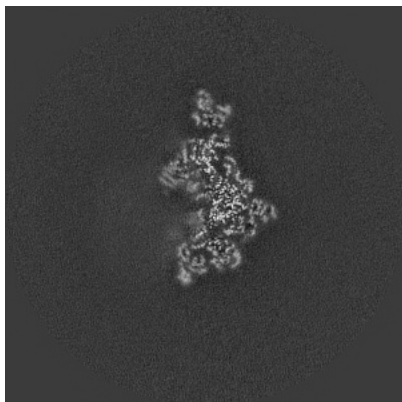


Z Index: 240

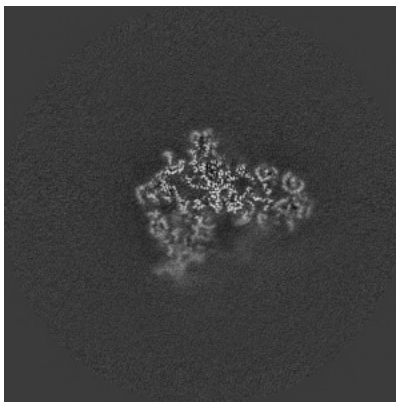
The images above show central slices of the map in three orthogonal directions.

## 6.3 Largest variance slices [i](#)

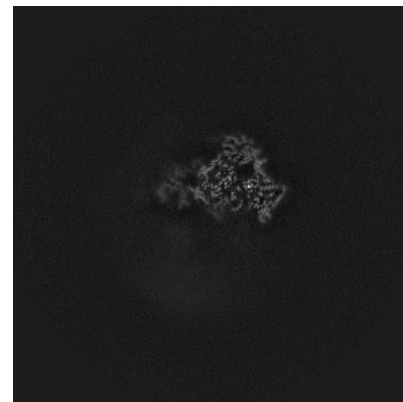
### 6.3.1 Primary map



X Index: 264



Y Index: 257

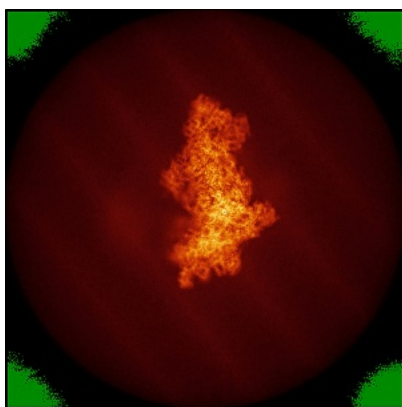


Z Index: 235

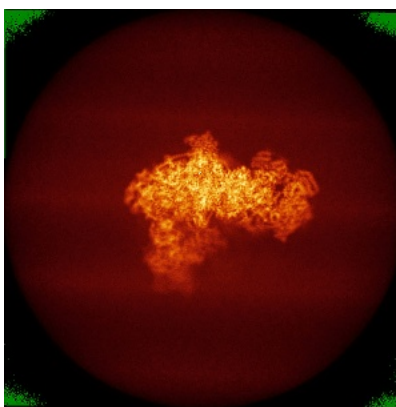
The images above show the largest variance slices of the map in three orthogonal directions.

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

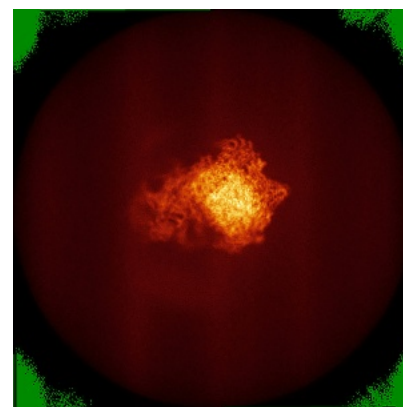
### 6.4.1 Primary map



X



Y

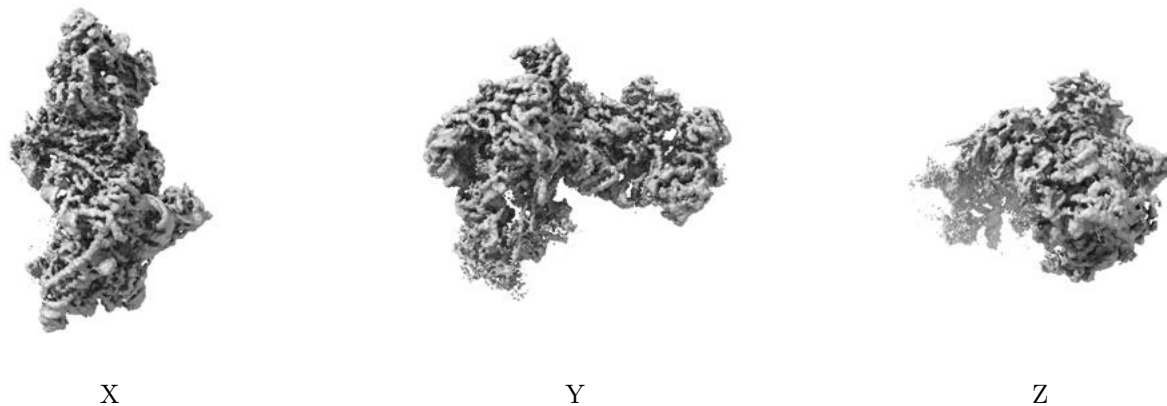


Z

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 0.02. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

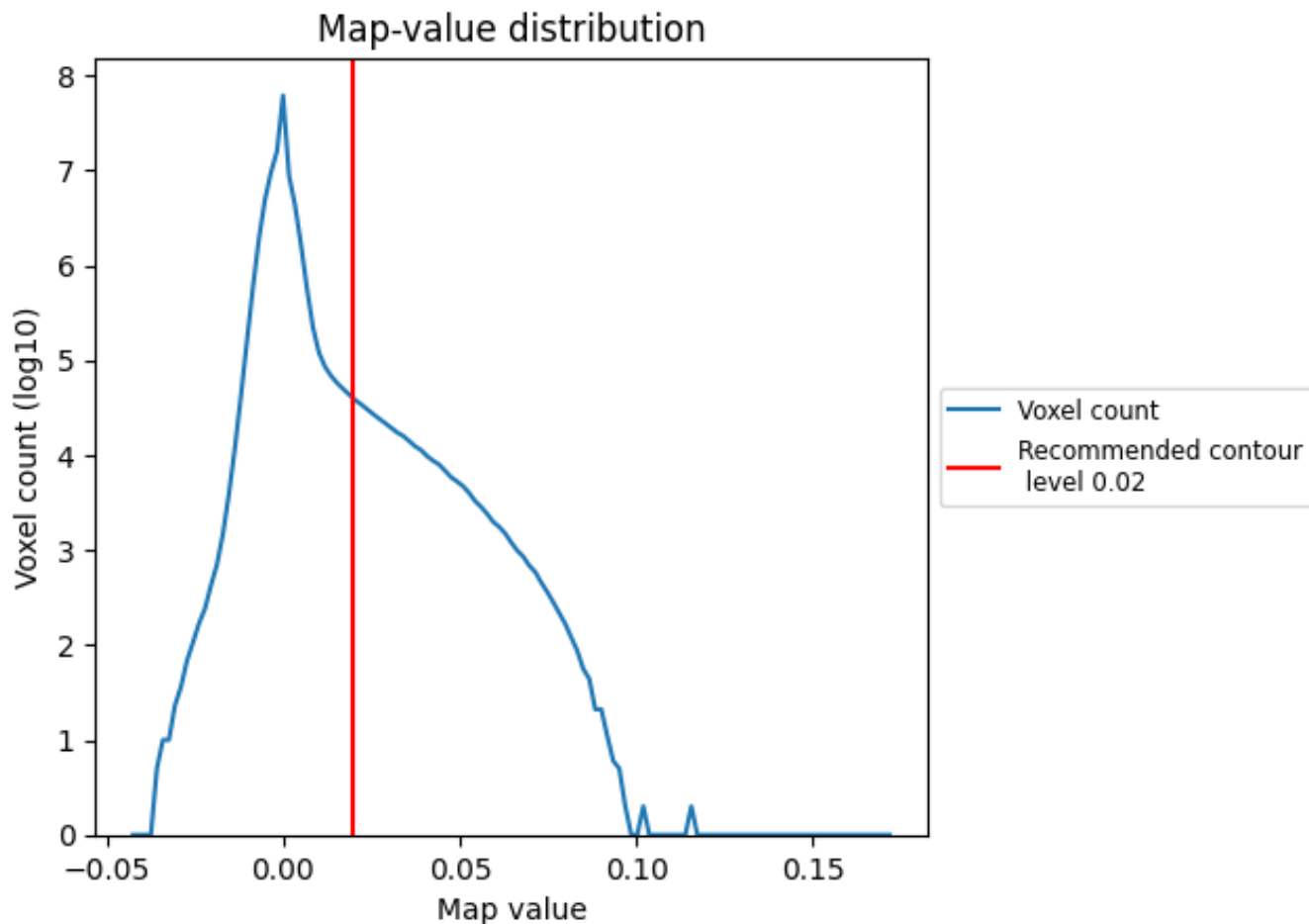
## 6.6 Mask visualisation [i](#)

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

## 7 Map analysis [i](#)

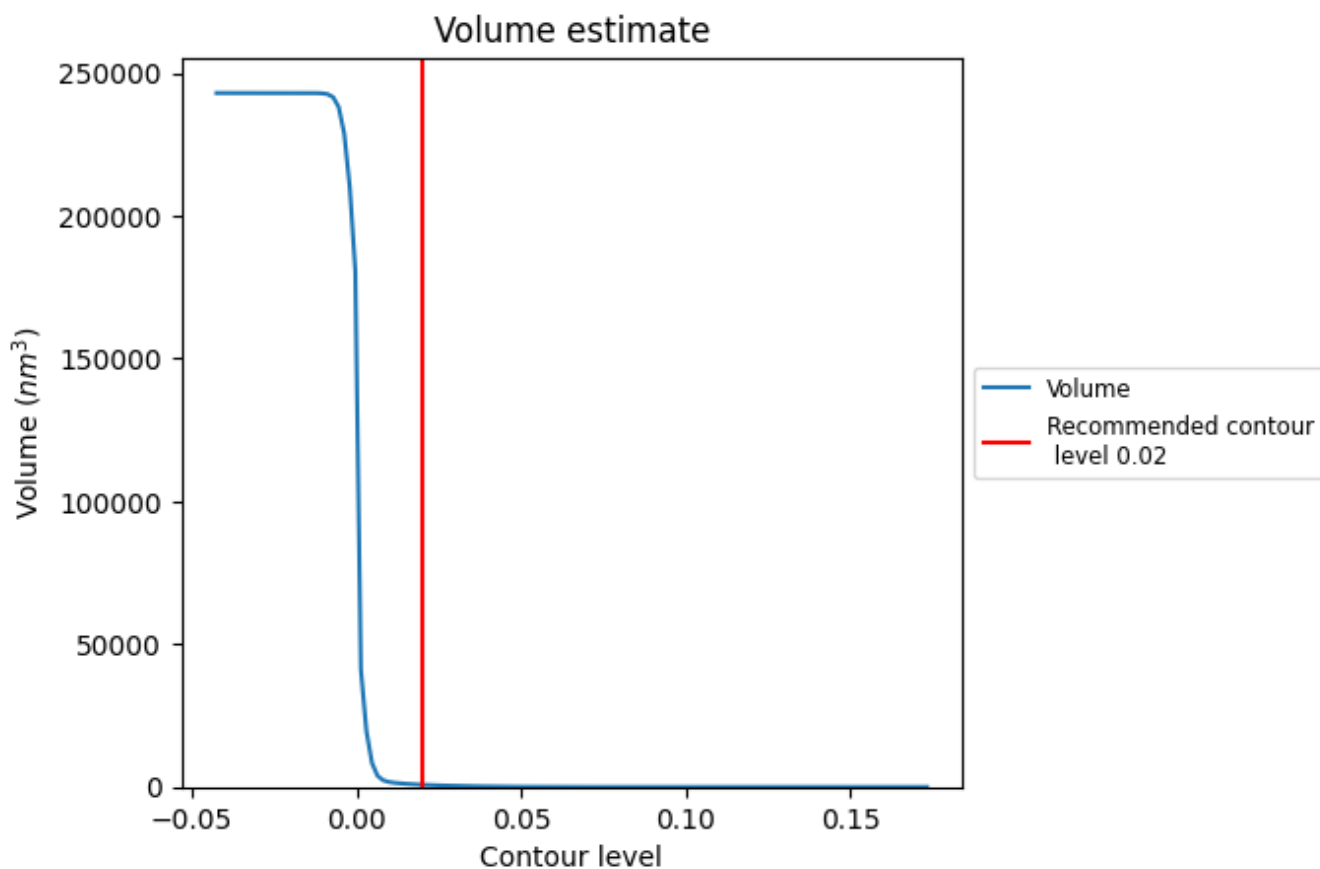
This section contains the results of statistical analysis of the map.

### 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.

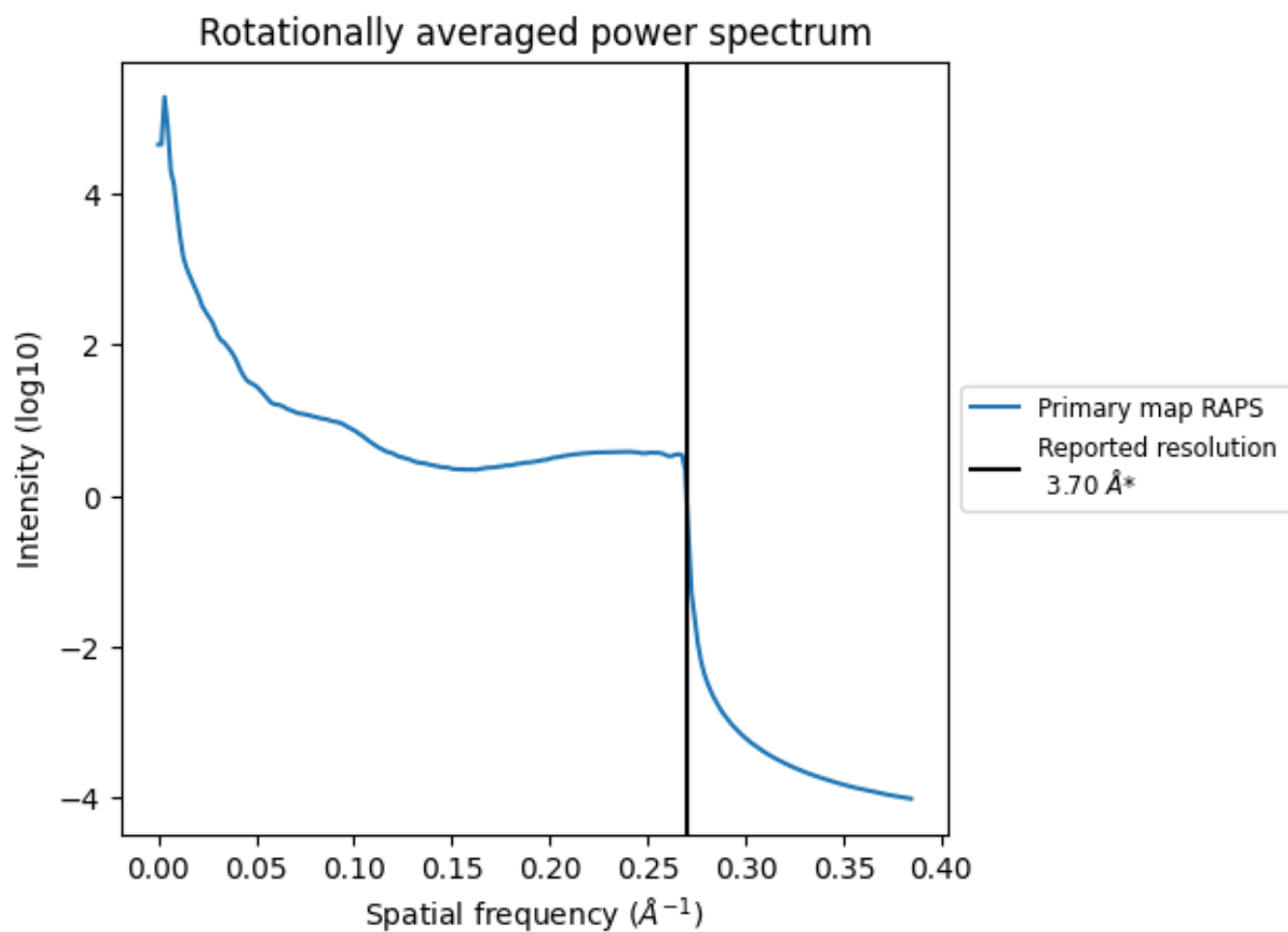
## 7.2 Volume estimate [\(i\)](#)



The volume at the recommended contour level is 766  $\text{nm}^3$ ; this corresponds to an approximate mass of 692 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  $0.270 \text{\AA}^{-1}$



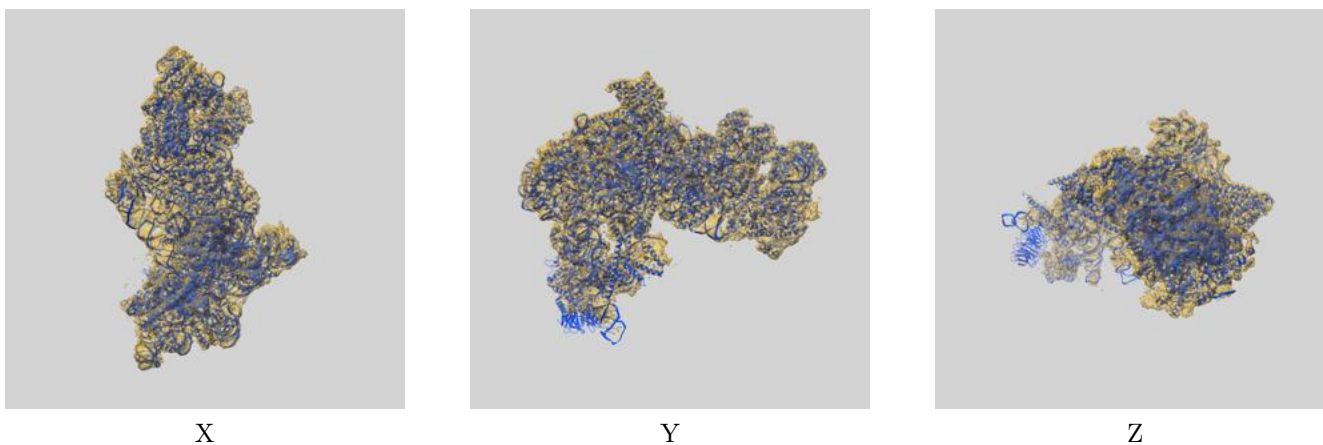
## 8 Fourier-Shell correlation

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

## 9 Map-model fit [i](#)

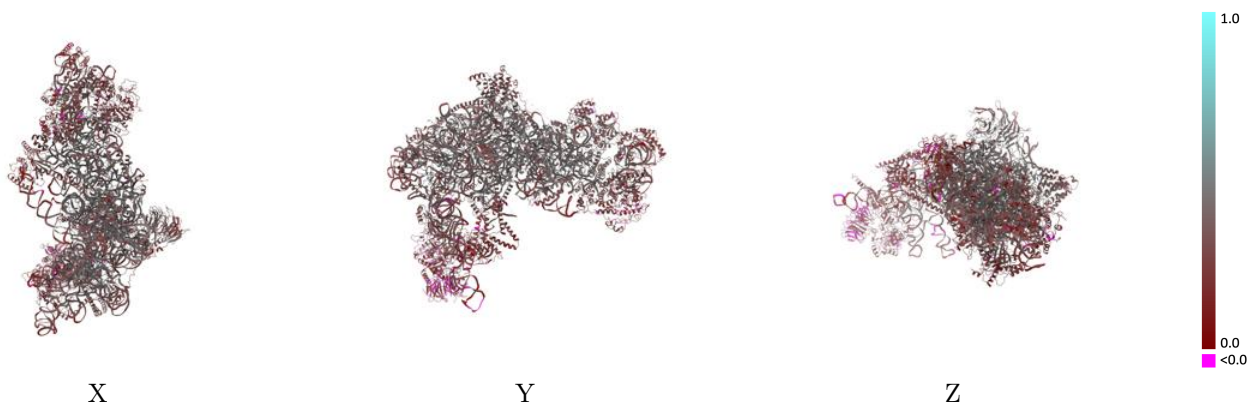
This section contains information regarding the fit between EMDB map EMD-7324 and PDB model 6C0F. Per-residue inclusion information can be found in section 3 on page 12.

### 9.1 Map-model overlay [i](#)



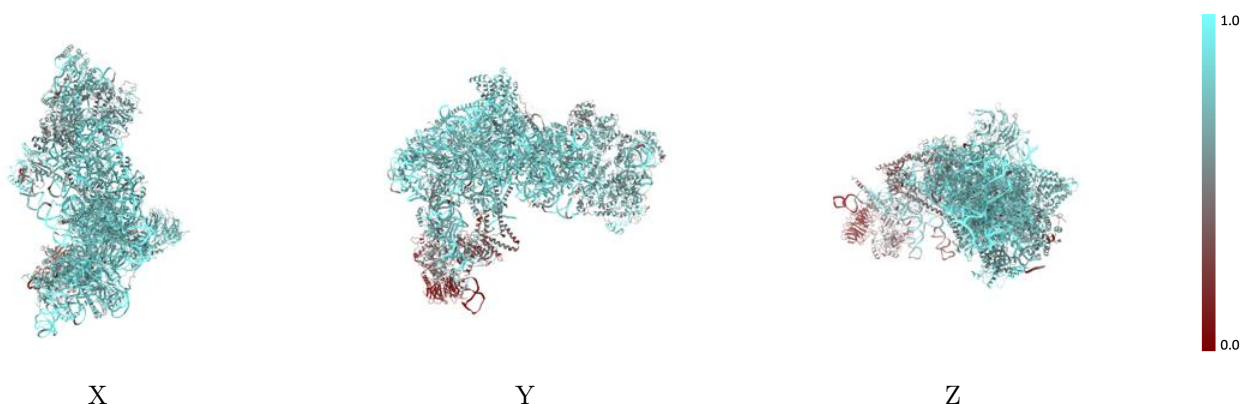
The images above show the 3D surface view of the map at the recommended contour level 0.02 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



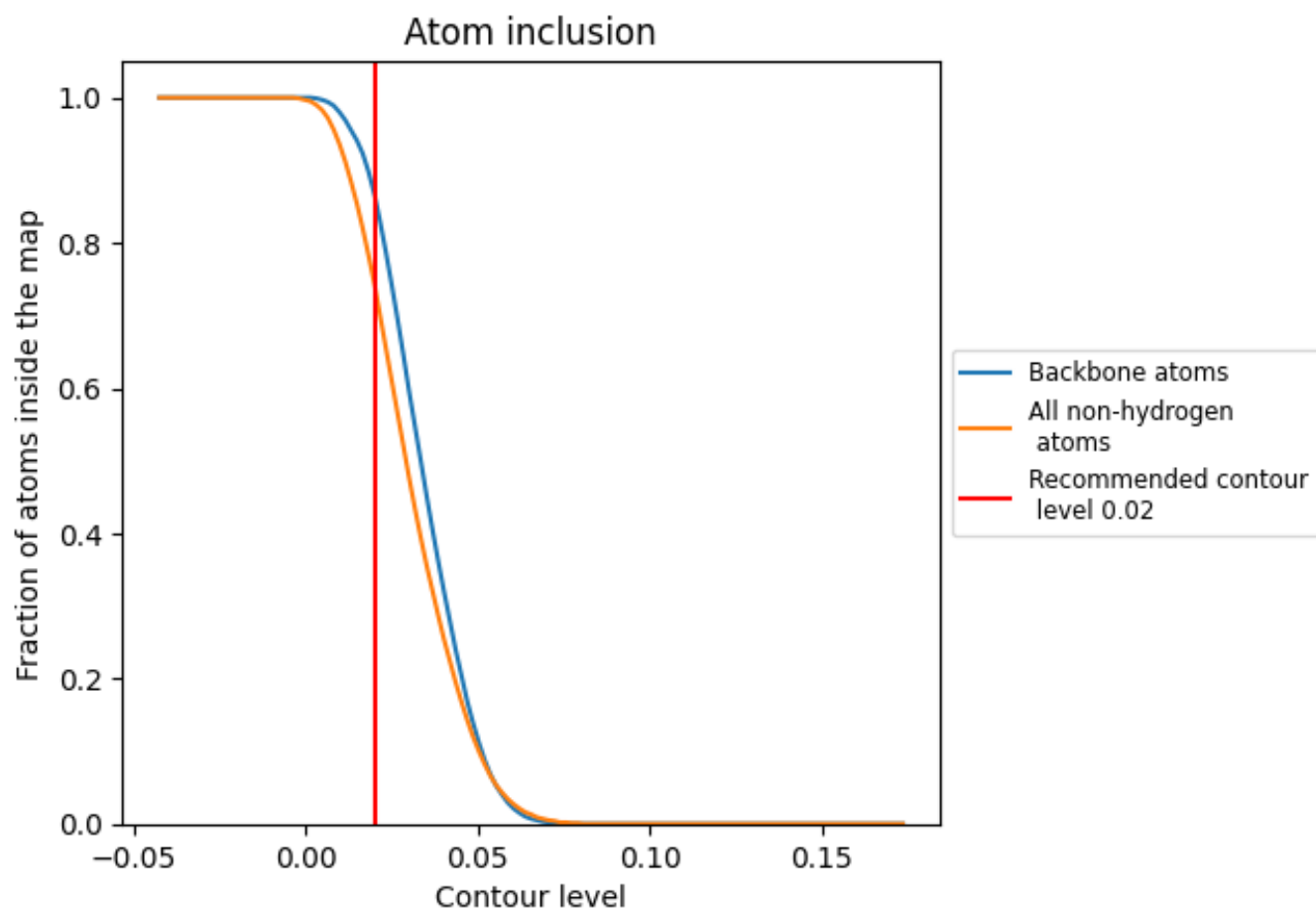
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.02).







































































## 9.4 Atom inclusion [i](#)



At the recommended contour level, 86% of all backbone atoms, 74% 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 (0.02) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.7410	 0.3390
1	 0.8830	 0.3610
2	 0.8970	 0.3760
6	 0.9050	 0.3320
7	 0.6840	 0.3700
8	 0.3980	 0.2320
A	 0.7580	 0.3680
B	 0.6190	 0.3050
C	 0.8040	 0.4470
D	 0.8070	 0.4120
E	 0.7670	 0.3790
F	 0.7610	 0.3610
G	 0.7080	 0.3880
I	 0.7410	 0.3890
K	 0.6770	 0.2960
L	 0.8330	 0.4340
M	 0.7690	 0.3460
N	 0.7530	 0.4110
O	 0.7670	 0.3700
P	 0.7000	 0.4030
Q	 0.7990	 0.4310
S	 0.6840	 0.2910
V	 0.3040	 0.2010
W	 0.1450	 0.1650
Y	 0.7890	 0.4300
b	 0.6940	 0.3020
e	 0.6760	 0.4540
f	 0.8110	 0.4470
h	 0.7010	 0.3560
i	 0.7040	 0.3450
j	 0.7590	 0.4070
m	 0.8540	 0.2610
n	 0.6680	 0.2740
o	 0.6850	 0.2810
p	 0.6210	 0.3030



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Chain	Atom inclusion	Q-score
q	 0.0020	 0.0870
s	 0.7210	 0.3360
t	 0.6750	 0.2990
u	 0.3820	 0.1730
v	 0.3600	 0.2200
w	 0.2850	 0.1910
x	 0.8790	 0.3140
y	 0.3610	 0.1580
z	 0.7750	 0.3490