WORLDWIDE PDB

PROTEIN DATA BANK

wwPDB EM Validation Summary Report (i)

Mar 9, 2026 – 01:18 PM EDT

PDB ID	:	1OFZ / pdb_000010fz
EMDB ID	:	EMD-75144
Title	:	30S ribosomal subunit from E. coli missing the gene encoding for the 16S rRNA 2'-O-methyltransferase RsmI
Authors	:	Barmada, M.I.; Nandi, S.; Conn, G.L.
Deposited on	:	2026-01-18
Resolution	:	2.91 Å(reported)
Based on initial model	:	7oe1

---

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 2.91 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.

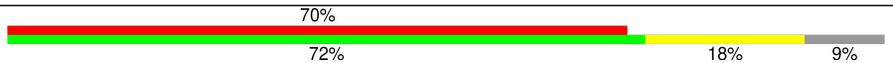| Metric	Percentile Ranks	Value
Clashscore		8
Ramachandran outliers		0.0%
Sidechain outliers		0.1%
RNA backbone		0.47

Worse   *Better*

▮ Percentile relative to all structures

⃞ Percentile relative to all EM structures

Metric	Model-Map Fit Percentile Ranks	Value
Q-score		0.328

Worse   *Better*

▮ Percentile relative to all EM structures

⃞ Percentile relative to EM structures of similar resolution

Metric	Whole archive (#Entries)	EM structures (#Entries)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	210492	15764	-
Ramachandran outliers	207382	16835	-
Sidechain outliers	206894	16415	-
RNA backbone	6643	2191	-
Q-score	-	25397	12972 (2.41 - 3.41)

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	A	1542	13% / 54% 35% 10% ·
2	D	205	· 86% 14%
3	E	166	80% 10% 10%

Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
4	F	135	7% / 62% / 12% / 26%
5	H	129	92% / 7%
6	K	128	11% / 70% / 22% / 9%
7	L	123	83% / 17%
8	O	89	85% / 13%
9	P	82	85% / 15%
10	Q	83	88% / 8%
11	R	74	62% / 12% / 26%
12	T	86	87% / 12%
13	B	240	70% / 72% / 18% / 9%
14	U	71	20% / 6% / 75%
15	C	232	43% / 73% / 16% / 11%
16	G	178	80% / 70% / 14% / 16%
17	I	129	57% / 74% / 24%
18	J	103	67% / 74% / 21% / 5%
19	M	117	59% / 74% / 24%
20	N	100	54% / 69% / 27%
21	S	91	40% / 65% / 22% / 13%

2   Entity composition ⓘ

There are 23 unique types of molecules in this entry. The entry contains 51201 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 16S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	1530	Total	C	N	O	P	0	0
			32831	14642	6024	10635	1530		

- Molecule 2 is a protein called Small ribosomal subunit protein uS4.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	D	205	Total	C	N	O	S	0	0
			1643	1026	315	298	4		

- Molecule 3 is a protein called Small ribosomal subunit protein uS5.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	E	150	Total	C	N	O	S	0	0
			1105	687	211	201	6		

- Molecule 4 is a protein called Small ribosomal subunit protein bS6, fully modified isoform.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	F	100	Total	C	N	O	S	0	0
			817	515	148	148	6		

- Molecule 5 is a protein called Small ribosomal subunit protein uS8.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	H	129	Total	C	N	O	S	0	0
			979	616	173	184	6		

- Molecule 6 is a protein called Small ribosomal subunit protein uS11.

Mol	Chain	Residues	Atoms					AltConf	Trace
6	K	117	Total	C	N	O	S	0	0
			877	540	174	160	3		

- Molecule 7 is a protein called Small ribosomal subunit protein uS12.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	L	123	Total 955	C 590	N 196	O 165	S 4	0	0

- Molecule 8 is a protein called Small ribosomal subunit protein uS15.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	O	88	Total 716	C 440	N 146	O 129	S 1	0	0

- Molecule 9 is a protein called Small ribosomal subunit protein bS16.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	P	82	Total 649	C 406	N 128	O 114	S 1	0	0

- Molecule 10 is a protein called Small ribosomal subunit protein uS17.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	Q	80	Total 648	C 411	N 121	O 113	S 3	0	0

- Molecule 11 is a protein called Small ribosomal subunit protein bS18.

Mol	Chain	Residues	Atoms				AltConf	Trace
11	R	55	Total 455	C 288	N 86	O 81	0	0

- Molecule 12 is a protein called Small ribosomal subunit protein bS20.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	T	85	Total 665	C 411	N 137	O 114	S 3	0	0

- Molecule 13 is a protein called Small ribosomal subunit protein uS2.

Mol	Chain	Residues	Atoms					AltConf	Trace
13	B	218	Total 1704	C 1081	N 305	O 311	S 7	0	0

- Molecule 14 is a protein called Small ribosomal subunit protein bS21.

Mol	Chain	Residues	Atoms				AltConf	Trace
14	U	18	Total 148	C 94	N 28	O 26	0	0

- Molecule 15 is a protein called Small ribosomal subunit protein uS3.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	C	206	Total 1624	C 1028	N 305	O 288	S 3	0	0

- Molecule 16 is a protein called Small ribosomal subunit protein uS7.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	G	150	Total 1174	C 730	N 226	O 214	S 4	0	0

- Molecule 17 is a protein called Small ribosomal subunit protein uS9.

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

- Molecule 18 is a protein called Small ribosomal subunit protein uS10.

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

- Molecule 19 is a protein called Small ribosomal subunit protein uS13.

Mol	Chain	Residues	Atoms					AltConf	Trace
19	M	114	Total 883	C 546	N 178	O 156	S 3	0	0

- Molecule 20 is a protein called Small ribosomal subunit protein uS14.

Mol	Chain	Residues	Atoms					AltConf	Trace
20	N	96	Total 774	C 483	N 160	O 128	S 3	0	0

- Molecule 21 is a protein called Small ribosomal subunit protein uS19.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
21	S	79	637	408	120	107	2	0	0

- Molecule 22 is MAGNESIUM ION (CCD ID: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		AltConf
			Total	Mg	
22	A	76	76	76	0
			Total	Mg	
22	K	1	1	1	0

- Molecule 23 is water.

Mol	Chain	Residues	Atoms		AltConf
			Total	O	
23	A	21	21	21	0
			Total	O	
23	D	2	2	2	0
			Total	O	
23	K	1	1	1	0
			Total	O	
23	L	1	1	1	0
			Total	O	
23	P	1	1	1	0
			Total	O	
23	R	1	1	1	0
			Total	O	
23	T	2	2	2	0
			Total	O	
23	B	3	3	3	0

3 Residue-property plots ⓘ

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion in map density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red diamond above a residue indicates a poor fit to the EM map for this residue (all-atom inclusion < 40%). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.
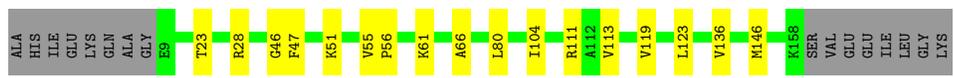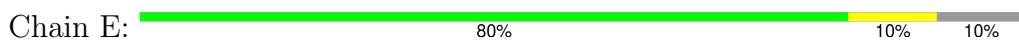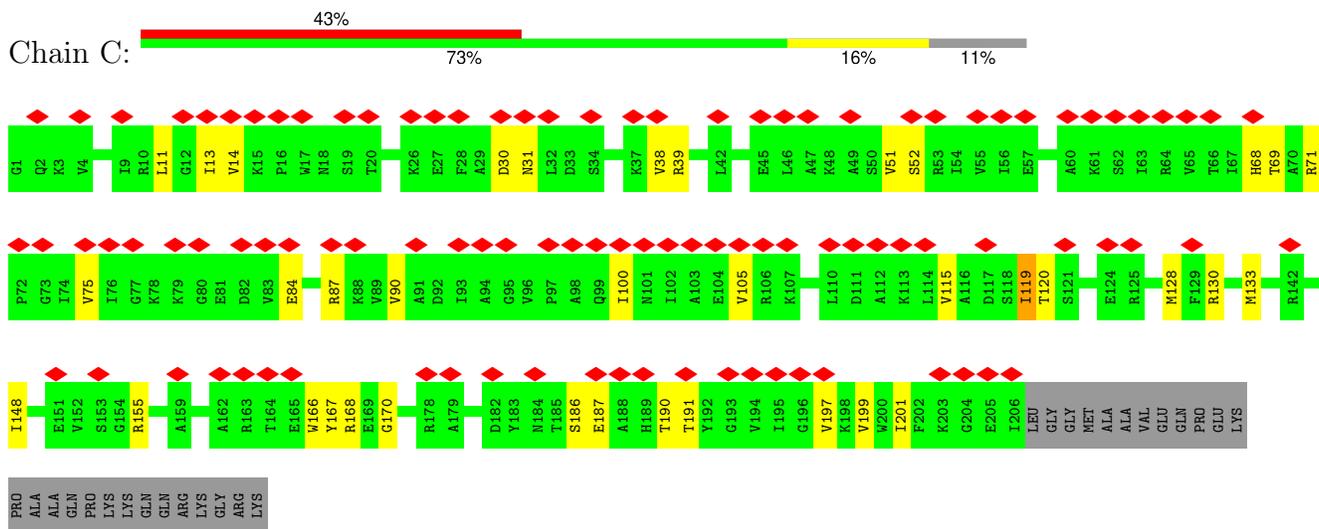
- Molecule 1: 16S rRNA
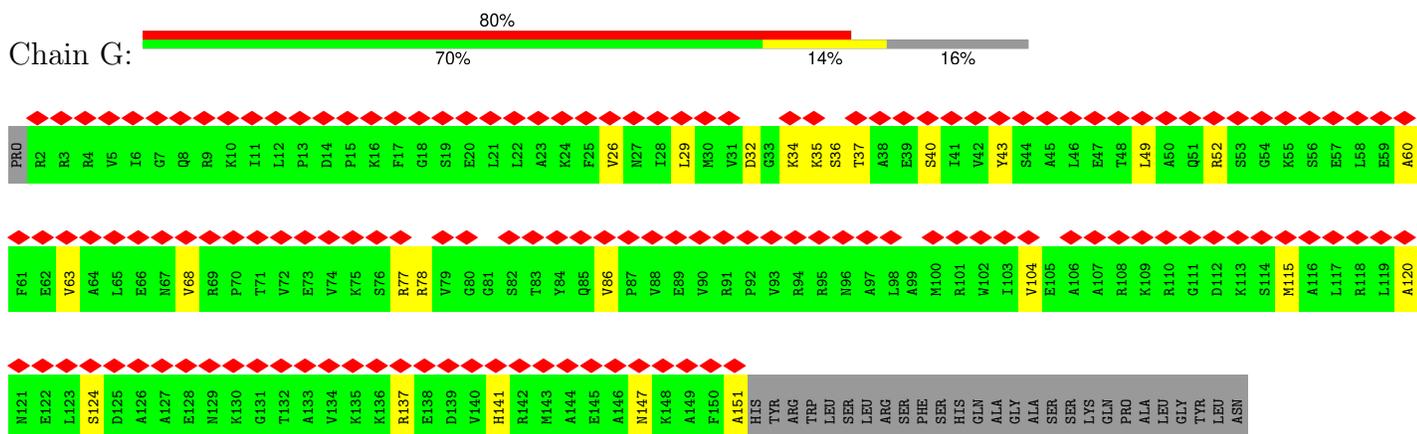
• Molecule 2: Small ribosomal subunit protein uS4

Chain D:

• Molecule 3: Small ribosomal subunit protein uS5

Chain E:

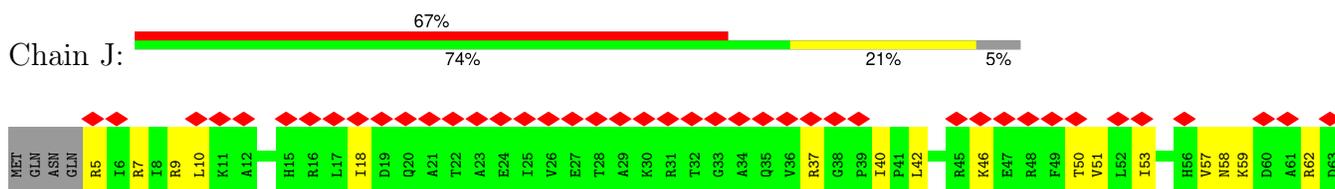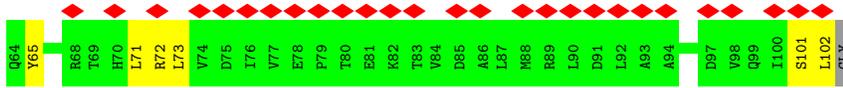• Molecule 4: Small ribosomal subunit protein bS6, fully modified isoform

Chain F:

7% 62% 12% 26%

M1 E5 I6 S15 E23 I29 I36 R44 N52 V64 E65 A66 V70 E73 L74 E75 F80 V89 K93 H94 A95 V96 T97 E98 A99 S100 PRO MET VAL LYS ALA LYS ASP GLU ARG ARG GLU ARG ARG ASP ASP PHE ALA ASN GLU THR ALA

ASP ASP ALA ALA GLY ASP SER GLU GLU GLU GLU GLU

• Molecule 5: Small ribosomal subunit protein uS8

Chain H:

92% 7%

S1 L10 R14 D47 T61 V71 E72 S73 I74 R79 V103 I124 A129

• Molecule 6: Small ribosomal subunit protein uS11

Chain K:

11% 70% 22% 9%

ALA LYS ALA PRO ILE ARG ALA ARG LYS ARG VAL R12 D17 A24 N27 N28 T29 I33 T34 N39 A40 L41 G42 T45 A46 G47 G48 S49 G50 F51 R52 G53 S54 R55 T58 P59 F60 A61 E67 R68 C69 A70 D71 A72 V73 Y76 G77 I78 K79 N80 L81

G91 S94 R97 A98 L99 N100 A101 R105 I106 K125 R126 R127 V128

• Molecule 7: Small ribosomal subunit protein uS12

Chain L:

83% 17%

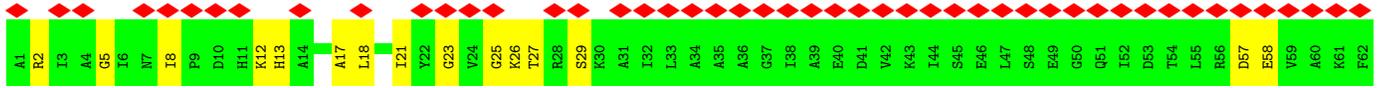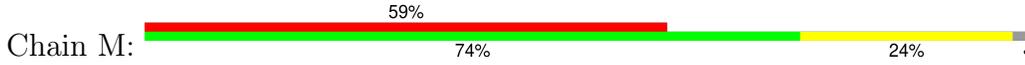A1 R8 A12 R13 V20 R30 N45 S46 A47 L48 R49 V54 Y65 I79 R82 G83 H95 T96 L101 D102 R113 S114 V118 A123

• Molecule 8: Small ribosomal subunit protein uS15

Chain O:

85% 13%

MET S1 L2 G22 L30 I35 L38 Q39 R53 M58 Q61 L65 L66 D67 R87 R88

• Molecule 9: Small ribosomal subunit protein bS16

Chain P:

85% 15%

M1 I4 R5 L6 V19 D23 S24 R25 N26 R31 V36 A43 S44 L52 D53 L54 V71 I75 A82

• Molecule 10: Small ribosomal subunit protein uS17

Chain Q:

88%   8%

THR ASP K3 I4 R5 E17 V57 P65 K68 T69 V78 V82 LEU

• Molecule 11: Small ribosomal subunit protein bS18

Chain R:

62%   12%   26%

ALA ARG TYR PHE ARG ARG ARG LYS PHE CYS ARG PHE THR ALA GLU GLY VAL GLN E19 I25 A26 T27 L28 K29 I32 R47 A55 K59 L67 R72 H73 GLN

• Molecule 12: Small ribosomal subunit protein bS20

Chain T:

87%   12%

ALA N2 Q12 R17 K18 H19 V34 R59 I66 H67 K70 R73 L78 A86

• Molecule 13: Small ribosomal subunit protein uS2

Chain B:

70%

72%   18%   9%

ALA THR VAL SER MET ARG ASP M8 L9 K10 A11 G12 V13 H14 F15 G16 H17 Q18 T19 R20 Y21 W22 N23 M26 K27 P28 F29 I30 F31 G32 A33 R34 N35 K36 V37 H38 I39 I40 N41 L42 E43 K44 T45 V46 P47 M48 F49 N50 E51 A52 L53 A54 E55 L56 N57 K58 I59 A60 S61

R62 K63 G64 K65 I66 L67 F68 V69 G70 T71 K72 R73 A74 A75 S76 E77 A78 V79 K80 D81 A82 A83 L84 S85 C86 D87 Q88 F89 F90 V91 N92 H93 R94 L100 T101 N102 W103 R107 K111 R112 L113 K114 D115 L116 E117 T118 Q119 S120 Q121 D122 G123 T124 F125 D126 K127 L128 T129

K130 K131 E132 A133 L134 M135 R136 T137 R138 E139 L140 E141 K142 L143 E144 N145 S146 L147 G148 G149 I150 K151 D152 M153 G154 G155 L156 P157 D158 A159 L160 F161 V162 I163 D164 A165 D166 H169 I170 K173 N177 L178 G179 I180 F183 A184 I185 V186 D187 T188 N189 S190 D191 P192 D193 G194

V195 D196 F197 V198 I199 D203 D204 A205 I206 R207 A208 V209 T210 L211 Y212 L213 G214 A215 V216 A217 A218 T219 V220 R221 E222 G223 R224 S225 GLN ASP LEU ALA SER GLN ALA GLU GLU SER PHE VAL GLU ALA GLU

• Molecule 14: Small ribosomal subunit protein bS21

Chain U:

20%   6%   75%

MET PRO VAL ILE LYS VAL ARG GLU ASN GLU PRO PHE ASP VAL ALA LEU ARG ARG PHE LYS ARG SER CYS GLU LYS ALA GLY VAL LEU ALA GLU VAL ARG ARG ARG GLU F36 K39 P40 R44 K45 R46 K53 ARG HIS ALA LYS LYS LEU ALA ARG GLU ASN ALA ARG ARG THR

ARG LEU TYR

• Molecule 15: Small ribosomal subunit protein uS3

Chain C:

43%

73%　　　　　16%　　11%

G1 Q2 K3 V4 I9 R10 L11 G12 I13 V14 K15 P16 W17 N18 S19 T20 K26 E27 F28 A29 D30 N31 L32 D33 S34 K37 V38 R39 L42 E45 L46 A47 K48 A49 S50 V51 S52 R53 I54 V55 I56 E57 A60 K61 S62 I63 R64 V65 T66 I67 H68 T69 A70 R71

P72 G73 I74 V75 I76 G77 K78 K79 G80 E81 D82 V83 E84 R87 K88 V89 V90 A91 D92 I93 A94 G95 V96 P97 A98 Q99 I100 N101 I102 A103 E104 V105 R106 K107 L110 D111 A112 K113 L114 V115 A116 D117 S118 I119 T120 S121 E124 R125 M128 F129 R130 M133 R142

I148 E151 V152 S153 G154 R155 A159 A162 R163 T164 E165 W166 Y167 R168 E169 G170 R178 A179 D182 Y183 N184 T185 S186 E187 A188 H189 T190 T191 Y192 G193 V194 I195 G196 V197 K198 V199 W200 I201 F202 K203 G204 E205 I206 LEU GLY MET ALA ALA VAL GLU GLN PRO GLU LYS

PRO ALA ALA GLN PRO LYS LYS GLN GLN ARG LYS GLY ARG LYS

- Molecule 16: Small ribosomal subunit protein uS7

Chain G:

80%

70%　　　　　14%　　　16%

PRO R2 R3 R4 V5 I6 G7 Q8 R9 K10 I11 L12 P13 D14 P15 K16 F17 G18 S19 E20 L21 L22 A23 K24 F25 V26 N27 I28 L29 M30 V31 D32 G33 K34 K35 S36 T37 A38 E39 S40 I41 V42 Y43 S44 A45 L46 E47 T48 L49 A50 Q51 R52 S53 G54 K55 S56 E57 L58 E59 A60

F61 E62 V63 A64 L65 E66 N67 V68 R69 P70 T71 V72 E73 V74 K75 S76 R77 R78 V79 G80 G81 S82 T83 Y84 Q85 V86 P87 V88 E89 V90 R91 P92 V93 R94 R95 N96 A97 L98 A99 M100 R101 W102 I103 V104 E105 A106 A107 R108 K109 R110 G111 D112 K113 S114 M115 A116 L117 R118 L119 A120

N121 E122 L123 S124 D125 A126 A127 E128 N129 K130 G131 T132 A133 V134 K135 K136 R137 E138 D139 V140 H141 R142 M143 A144 E145 A146 N147 K148 A149 F150 A151 HIS TYR ARG TRP LEU SER LEU ARG SER PHE SER HIS GLN ALA GLY SER SER LYS GLN PRO ALA LEU GLY TYR LEU ASN

- Molecule 17: Small ribosomal subunit protein uS9

Chain I:

57%

74%　　　　　　　24%　　・

ALA GLU N3 Q4 Y5 Y6 G7 T8 G9 R10 R11 K12 S13 R17 V18 F19 I20 K21 P22 G23 N24 G25 K26 I27 V28 I29 N30 Q31 L34 E35 Q36 Y37 F38 G39 R40 R44 M45 V46 V47 R48 Q49 P50 L51 E52 L53 V54 D55 M56 V57 E58 K59 L60 D61 L62 Y63 I64 T65

V66 K67 G68 G69 G70 I71 S72 G73 G76 A77 H80 G81 I82 A85 L86 M87 E88 Y89 D90 E91 S92 L93 R94 S95 E96 L97 R98 K99 A100 G101 F102 V103 T104 R105 R108 Q109 V110 E111 R112 K113 K114 V115 G116 L117 R118 K119 A120 R121 R122 R123 P124 Q125 F126 S127 K128 R129

- Molecule 18: Small ribosomal subunit protein uS10

Chain J:

67%

74%　　　　　　21%　　　5%

MET GLN ASN GLN R5 I6 R7 I8 R9 L10 K11 A12 H15 R16 L17 I18 D19 Q20 A21 T22 A23 E24 I25 V26 E27 T28 A29 K30 R31 T32 G33 A34 Q35 V36 R37 G38 P39 I40 P41 L42 R45 K46 E47 R48 F49 T50 V51 L52 I53 H56 V57 N58 K59 D60 A61 R62 D63

Q64 Y65 R68 T69 H70 L71 R72 L73 V74 D75 I76 V77 E78 P79 T80 E81 K82 T83 V84 D85 A86 L87 M88 R89 L90 D91 L92 A93 A94 D97 V98 Q99 I100 S101 L102 GLY

• Molecule 19: Small ribosomal subunit protein uS13

Chain M:

59%

74% 24%

A1 R2 I3 A4 G5 I6 N7 I8 P9 D10 H11 K12 H13 A14 A17 L18 I21 Y22 G23 V24 G25 K26 T27 R28 S29 K30 A31 I32 L33 A34 A35 A36 G37 I38 A39 E40 D41 V42 K43 I44 S45 E46 L47 S48 E49 G50 Q51 I52 D53 T54 L55 R56 D57 E58 V59 A60 K61 F62

V63 V64 E65 G66 D67 R70 M74 S75 I76 K77 R78 L79 M80 D81 L82 G83 C84 Y85 R86 R89 H90 R91 R92 G93 V96 R97 G98 Q99 R100 T101 K102 T103 N104 A105 R106 T107 R108 K109 K113 P114 ILE LYS LYS

• Molecule 20: Small ribosomal subunit protein uS14

Chain N:

54%

69% 27%

A1 K2 Q3 S4 A7 R8 E9 V10 K11 R12 V13 A14 L15 A16 D17 K18 Y19 F20 A21 K22 R23 A24 E25 L26 K27 S31 N34 A35 SER ASP GLU ASP R40 W41 V44 L45 K46 L47 Q48 T49 R52 D53 S54 S55 P56 S57 R58 Q59 R60 N61 R62 G71 F72 L73

R74 K75 F76 G77 L78 S79 R80 I81 K82 V83 R84 E85 A86 A87 M88 E91 I92 P93 G94 L95 K96 K97 A98 S99 W100

• Molecule 21: Small ribosomal subunit protein uS19

Chain S:

40%

65% 22% 13%

PRO R2 K6 G7 P8 D11 L12 H13 L14 L15 K16 K17 V18 E19 K20 A21 V22 E23 S24 G25 D26 K27 K28 P29 L30 R35 R36 I39 F40 P41 N42 M43 I44 G45 L46 T47 I48 A49 V50 R54 Q55 H56 F60 V61 T62 D63 E64 M65 V66 G67 H68 K69 L70 G71

E72 F73 A74 P75 T76 R80 GLY HIS ALA ALA ASP LYS LYS ALA LYS LYS LYS

4 Experimental information ⓘ

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	58273	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	TFS KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose $(e^-/\text{Å}^2)$	49.27	Depositor
Minimum defocus (nm)	400	Depositor
Maximum defocus (nm)	2900	Depositor
Magnification	105000	Depositor
Image detector	GATAN K3 BIOQUANTUM (6k x 4k)	Depositor
Maximum map value	0.699	Depositor
Minimum map value	-0.259	Depositor
Average map value	0.001	Depositor
Map value standard deviation	0.027	Depositor
Recommended contour level	0.108	Depositor
Map size (Å)	369.6, 369.6, 369.6	wwPDB
Map dimensions	448, 448, 448	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.825, 0.825, 0.825	Depositor

5 Model quality ⓘ

5.1 Standard geometry ⓘ

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

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#$|Z|$ >5	RMSZ	#$|Z|$ >5
1	A	0.08	0/36762	0.23	0/57350
2	D	0.09	0/1665	0.25	0/2227
3	E	0.10	0/1118	0.22	0/1504
4	F	0.12	0/835	0.31	0/1128
5	H	0.11	0/989	0.24	0/1326
6	K	0.11	0/893	0.27	0/1205
7	L	0.11	0/969	0.26	0/1300
8	O	0.11	0/724	0.22	0/966
9	P	0.11	0/659	0.27	0/884
10	Q	0.06	0/657	0.22	0/881
11	R	0.07	0/462	0.27	0/621
12	T	0.11	0/671	0.25	0/888
13	B	0.10	0/1735	0.26	0/2338
14	U	0.11	0/150	0.38	0/198
15	C	0.11	0/1651	0.24	0/2225
16	G	0.10	0/1187	0.26	0/1591
17	I	0.11	0/1034	0.32	0/1375
18	J	0.10	0/796	0.30	0/1077
19	M	0.10	0/892	0.26	0/1193
20	N	0.10	0/785	0.22	0/1043
21	S	0.09	0/652	0.24	0/877
All	All	0.09	0/55286	0.24	0/82197

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts ⓘ

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	32831	0	16521	422	0
2	D	1643	0	1710	31	0
3	E	1105	0	1148	13	0
4	F	817	0	808	10	0
5	H	979	0	1034	7	0
6	K	877	0	887	20	0
7	L	955	0	1019	18	0
8	O	716	0	742	7	0
9	P	649	0	666	11	0
10	Q	648	0	691	5	0
11	R	455	0	478	7	0
12	T	665	0	714	10	0
13	B	1704	0	1732	28	0
14	U	148	0	157	3	0
15	C	1624	0	1699	31	0
16	G	1174	0	1230	25	0
17	I	1022	0	1070	31	0
18	J	786	0	828	30	0
19	M	883	0	944	21	0
20	N	774	0	827	29	0
21	S	637	0	665	16	0
22	A	76	0	0	0	0
22	K	1	0	0	0	0
23	A	21	0	0	4	0
23	B	3	0	0	3	0
23	D	2	0	0	3	0
23	K	1	0	0	0	0
23	L	1	0	0	0	0
23	P	1	0	0	0	0
23	R	1	0	0	2	0
23	T	2	0	0	2	0
All	All	51201	0	35570	645	0

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

The worst 5 of 645 close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

WORLDWIDE
wwPDB
PROTEIN DATA BANK

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
11:R:59:LYS:HE3	23:R:101:HOH:O	1.41	1.20
11:R:55:ALA:HB1	23:R:101:HOH:O	1.49	1.10
2:D:158:LEU:HB2	23:D:301:HOH:O	1.57	1.05
1:A:1405:G:N2	1:A:1496:C:O2	1.93	1.02
1:A:1296:C:H3'	23:A:1704:HOH:O	1.63	0.97

There are no symmetry-related clashes.

5.3 Torsion angles ⓘ

5.3.1 Protein backbone ⓘ

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	
2	D	203/205 (99%)	191 (94%)	12 (6%)	0	100	100
3	E	148/166 (89%)	136 (92%)	12 (8%)	0	100	100
4	F	98/135 (73%)	91 (93%)	7 (7%)	0	100	100
5	H	127/129 (98%)	122 (96%)	4 (3%)	1 (1%)	16	44
6	K	115/128 (90%)	105 (91%)	10 (9%)	0	100	100
7	L	121/123 (98%)	108 (89%)	13 (11%)	0	100	100
8	O	86/89 (97%)	86 (100%)	0	0	100	100
9	P	80/82 (98%)	73 (91%)	7 (9%)	0	100	100
10	Q	78/83 (94%)	76 (97%)	2 (3%)	0	100	100
11	R	53/74 (72%)	50 (94%)	3 (6%)	0	100	100
12	T	83/86 (96%)	82 (99%)	1 (1%)	0	100	100
13	B	216/240 (90%)	195 (90%)	21 (10%)	0	100	100
14	U	16/71 (22%)	13 (81%)	3 (19%)	0	100	100
15	C	204/232 (88%)	184 (90%)	20 (10%)	0	100	100
16	G	148/178 (83%)	143 (97%)	5 (3%)	0	100	100
17	I	125/129 (97%)	113 (90%)	12 (10%)	0	100	100

Continued on next page...

WORLDWIDE
wwPDB
PROTEIN DATA BANK

Continued from previous page...

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
18	J	96/103 (93%)	81 (84%)	15 (16%)	0	100	100
19	M	112/117 (96%)	103 (92%)	9 (8%)	0	100	100
20	N	92/100 (92%)	88 (96%)	4 (4%)	0	100	100
21	S	77/91 (85%)	70 (91%)	7 (9%)	0	100	100
All	All	2278/2561 (89%)	2110 (93%)	167 (7%)	1 (0%)	100	100

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
5	H	71	VAL

5.3.2   Protein sidechains ⓘ

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	
2	D	172/172 (100%)	172 (100%)	0	100	100
3	E	113/125 (90%)	113 (100%)	0	100	100
4	F	87/116 (75%)	87 (100%)	0	100	100
5	H	104/104 (100%)	104 (100%)	0	100	100
6	K	90/98 (92%)	90 (100%)	0	100	100
7	L	103/103 (100%)	103 (100%)	0	100	100
8	O	76/77 (99%)	76 (100%)	0	100	100
9	P	65/65 (100%)	65 (100%)	0	100	100
10	Q	74/77 (96%)	74 (100%)	0	100	100
11	R	48/64 (75%)	48 (100%)	0	100	100
12	T	65/65 (100%)	65 (100%)	0	100	100
13	B	180/198 (91%)	180 (100%)	0	100	100
14	U	15/61 (25%)	15 (100%)	0	100	100
15	C	170/189 (90%)	169 (99%)	1 (1%)	84	94

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
16	G	123/146 (84%)	123 (100%)	0	100	100
17	I	105/106 (99%)	105 (100%)	0	100	100
18	J	86/90 (96%)	86 (100%)	0	100	100
19	M	92/95 (97%)	92 (100%)	0	100	100
20	N	79/83 (95%)	79 (100%)	0	100	100
21	S	70/78 (90%)	70 (100%)	0	100	100
All	All	1917/2112 (91%)	1916 (100%)	1 (0%)	92	98

All (1) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
15	C	119	ILE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 7 such sidechains are listed below:

Mol	Chain	Res	Type
11	R	51	GLN
16	G	8	GLN
20	N	48	GLN
17	I	3	ASN
9	P	18	GLN

5.3.3　RNA ⓘ

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	A	1529/1542 (99%)	359 (23%)	17 (1%)

5 of 359 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	A	9	G
1	A	18	C
1	A	22	G
1	A	31	G
1	A	39	G

5 of 17 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
1	A	1225	A
1	A	1388	C
1	A	493	A
1	A	563	A
1	A	931	C

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

There are no non-standard protein/DNA/RNA residues in this entry.

5.5 Carbohydrates ⓘ

There are no oligosaccharides in this entry.

5.6 Ligand geometry ⓘ

Of 77 ligands modelled in this entry, 77 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 ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

6　Map visualisation ⓘ

This section contains visualisations of the EMDB entry EMD-75144. 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 ⓘ
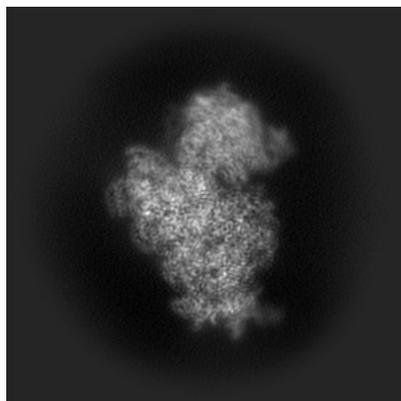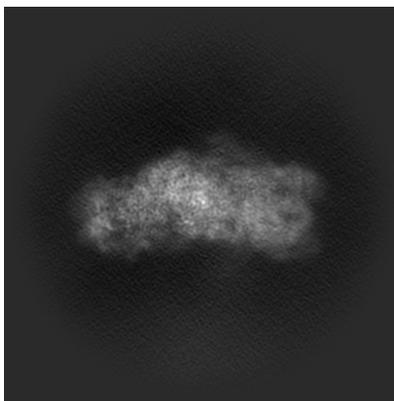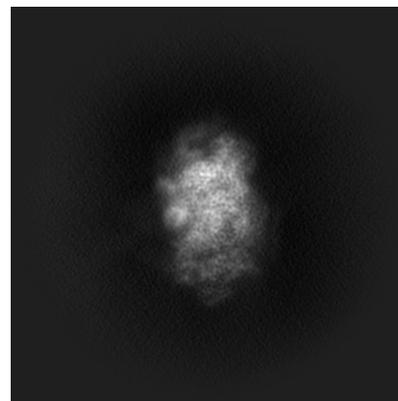
6.1.1　Primary map

X	Y	Z

6.1.2　Raw map

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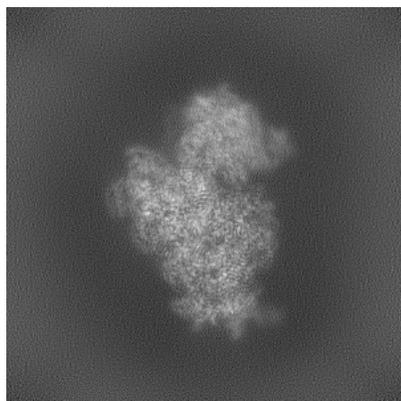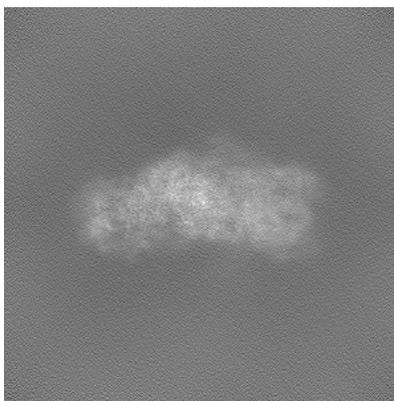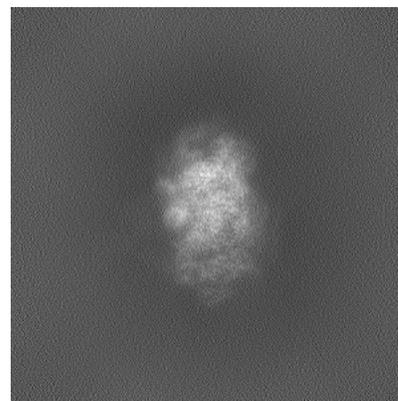
The images above show the map projected in three orthogonal directions.

6.2   Central slices   ⓘ
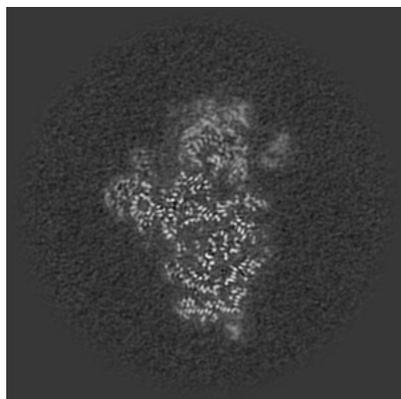
6.2.1   Primary map
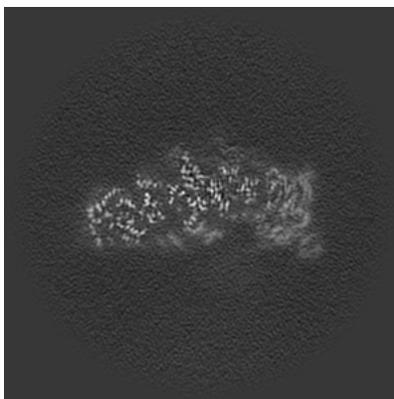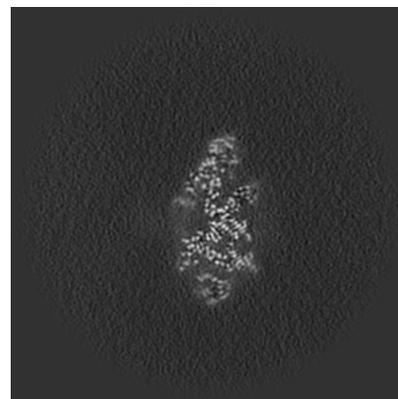
X Index: 224	Y Index: 224	Z Index: 224

6.2.2   Raw map
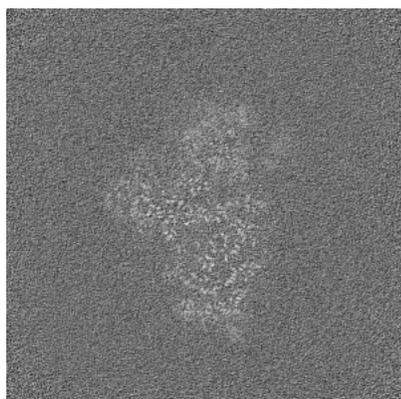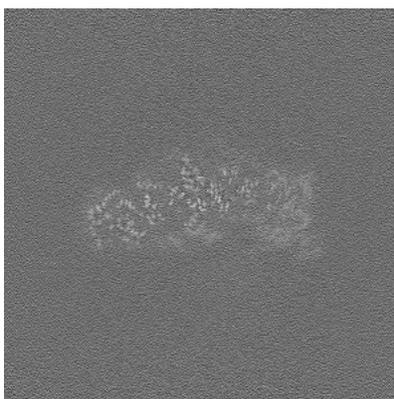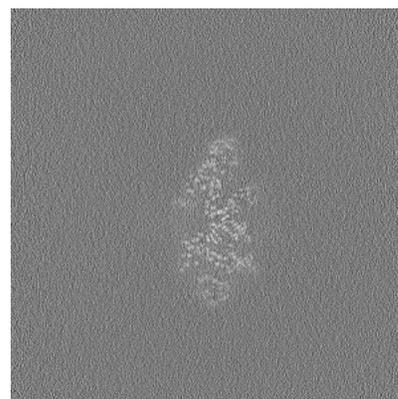
X Index: 224	Y Index: 224	Z Index: 224

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

6.3   Largest variance slices ⓘ
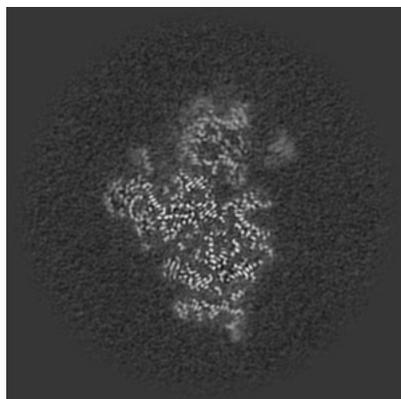
6.3.1   Primary map
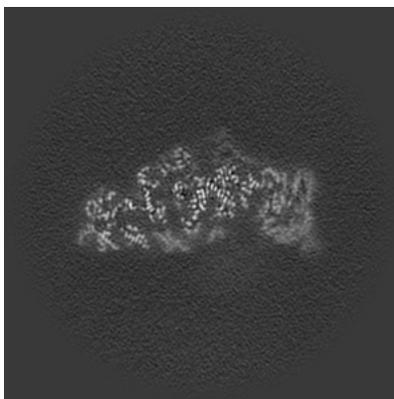
X Index: 228	Y Index: 218	Z Index: 224

6.3.2   Raw map
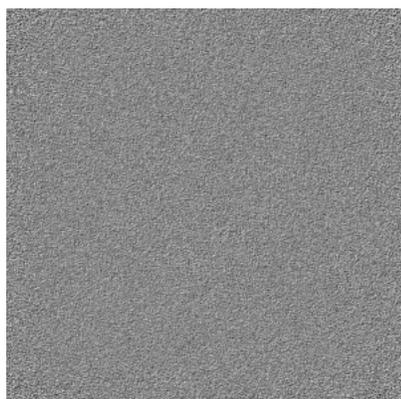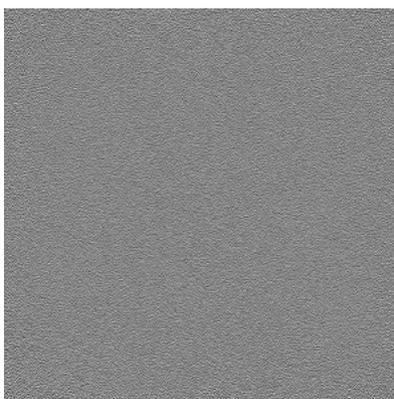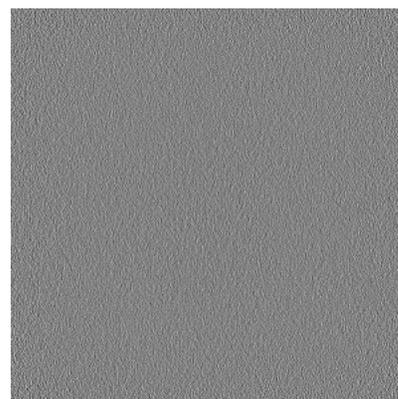
X Index: 0	Y Index: 0	Z Index: 0

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

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

6.4.1 Primary map

X   Y   Z

6.4.2 Raw map

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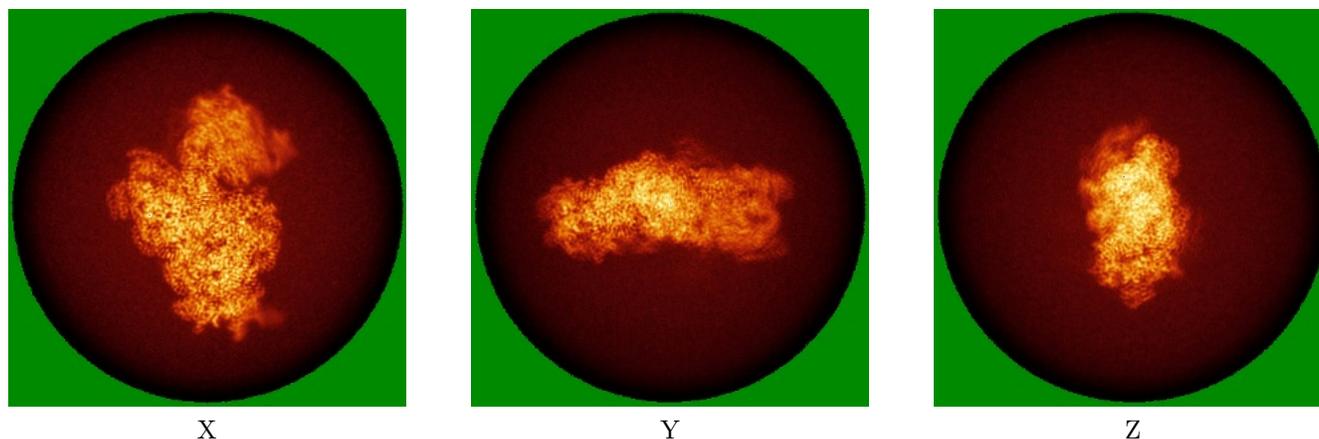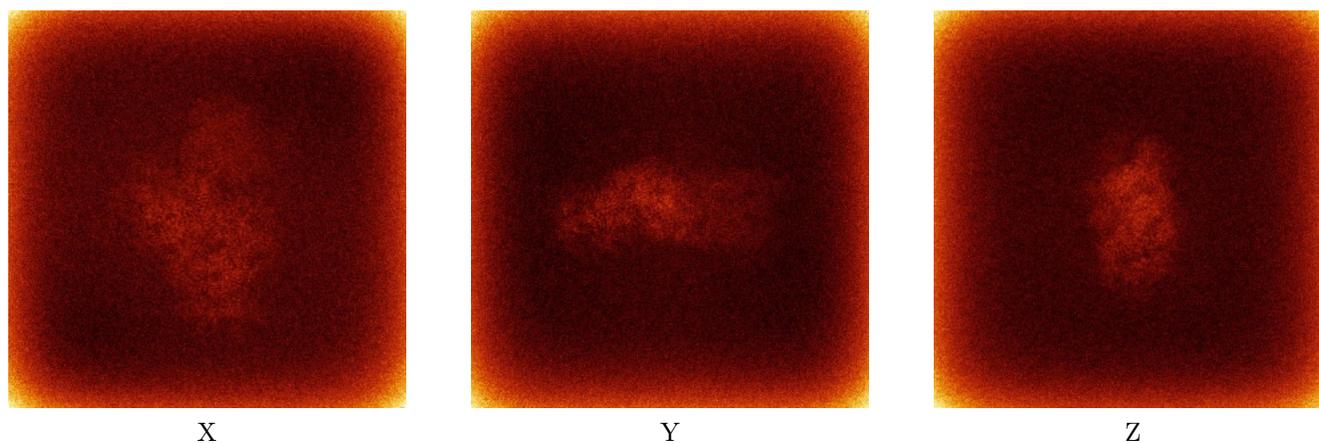
The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

6.5 Orthogonal surface views ⓘ

6.5.1 Primary map

X   Y   Z

The images above show the 3D surface view of the map at the recommended contour level 0.108. 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
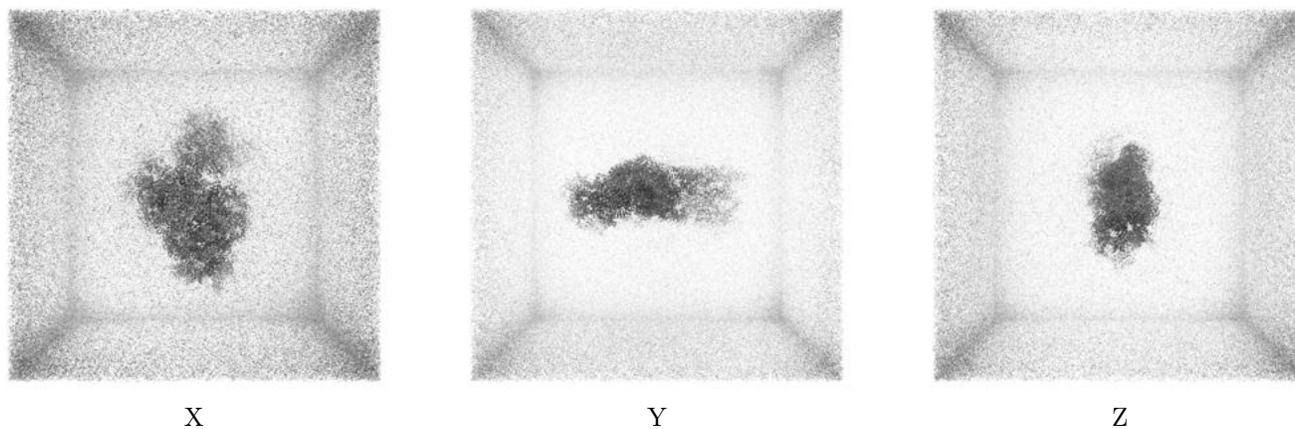
These images show the 3D surface of the raw map. The raw map's contour level was selected so that its surface encloses the same volume as the primary map does at its recommended contour level.

6.6 Mask visualisation ⓘ

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_75144_msk_1.map ⓘ

X   Y   Z
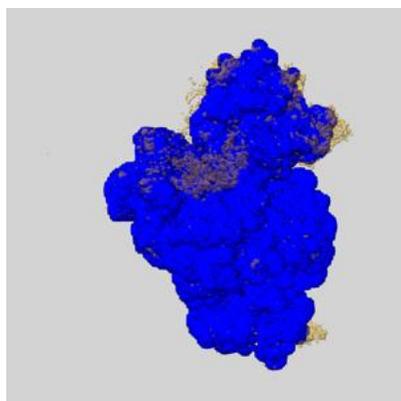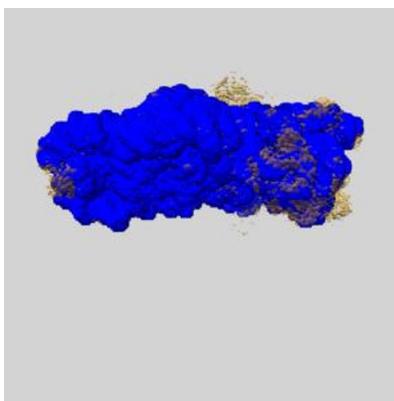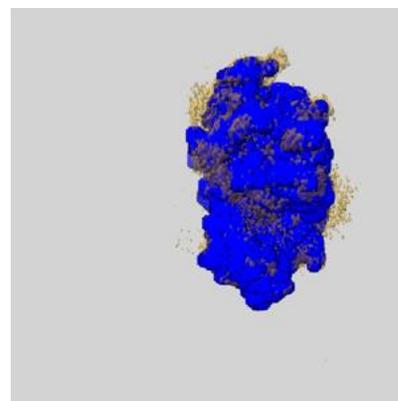
7   Map analysis ⓘ

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 ⓘ
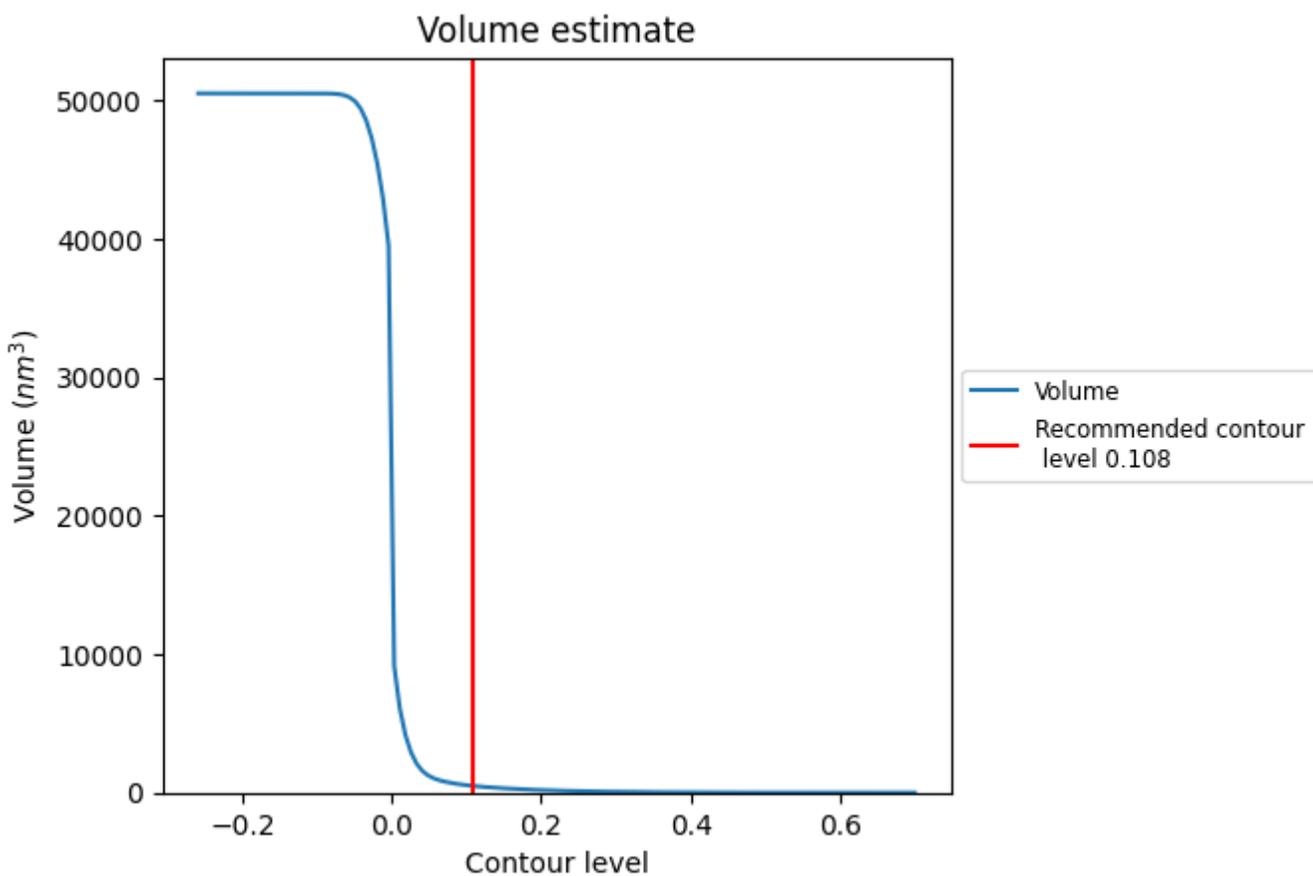
The volume at the recommended contour level is 488 nm^3; this corresponds to an approximate mass of 441 kDa.

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 ⓘ
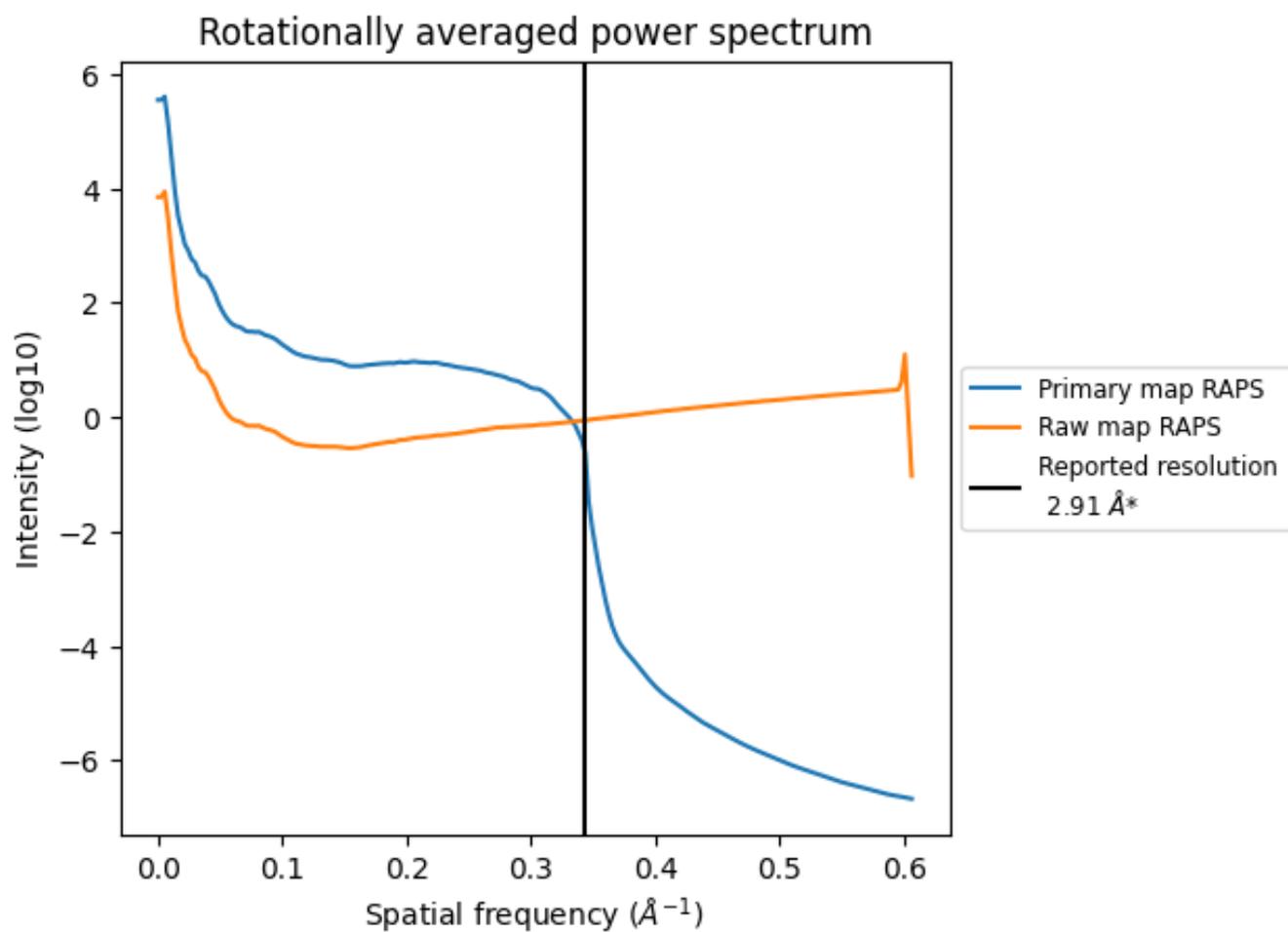
*Reported resolution corresponds to spatial frequency of 0.344 Å^{-1}

8 Fourier-Shell correlation (i)

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

8.1 FSC (i)
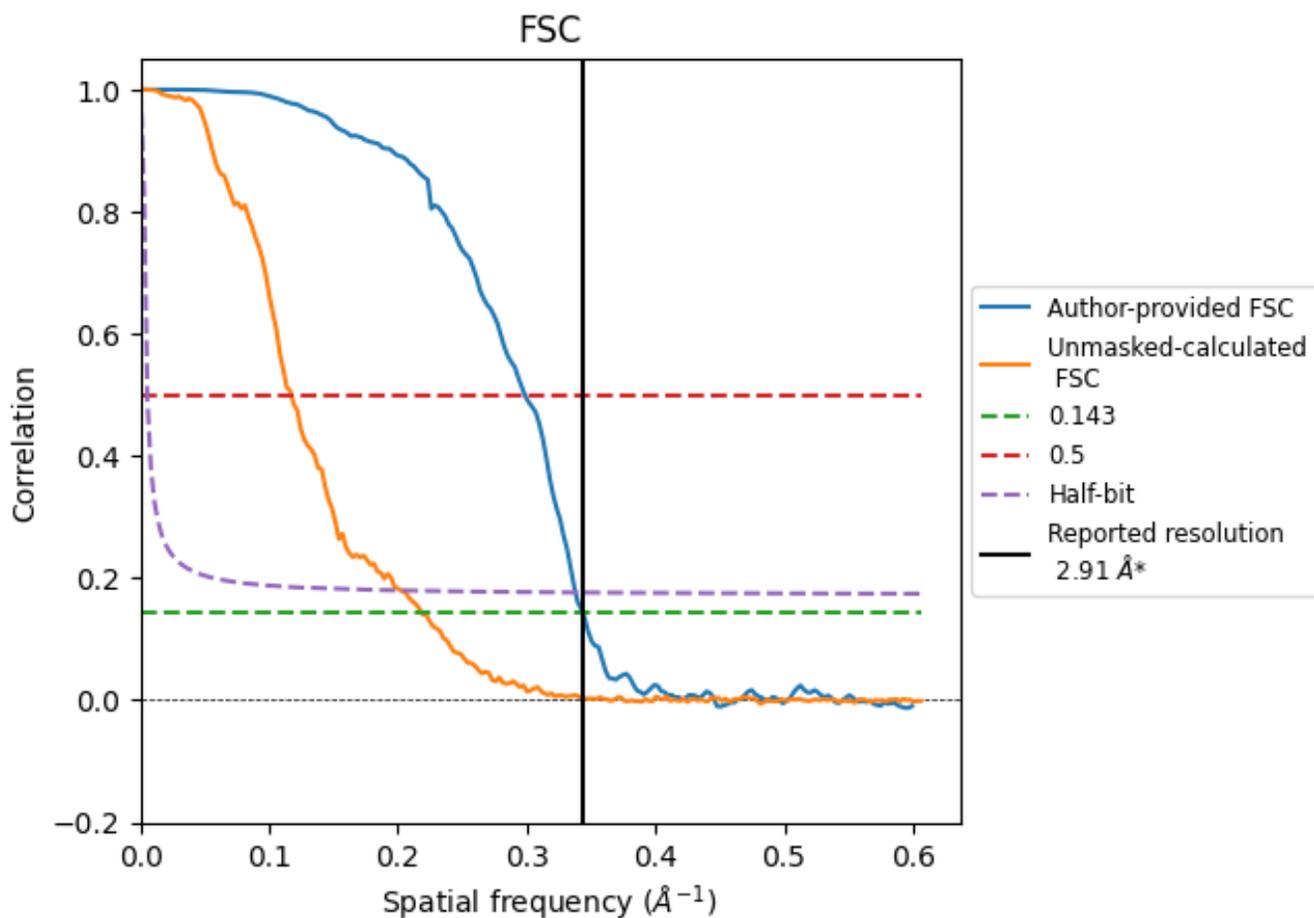
*Reported resolution corresponds to spatial frequency of 0.344 Å^{-1}

8.2 Resolution estimates ⓘ

Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.91	-	-
Author-provided FSC curve	2.91	3.35	2.96
Unmasked-calculated*	4.58	8.54	4.95

*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 4.58 differs from the reported value 2.91 by more than 10 %

9 Map-model fit ⓘ

This section contains information regarding the fit between EMDB map EMD-75144 and PDB model 10FZ. Per-residue inclusion information can be found in section 3 on page 8.

9.1 Map-model overlay ⓘ

| X | Y | Z |
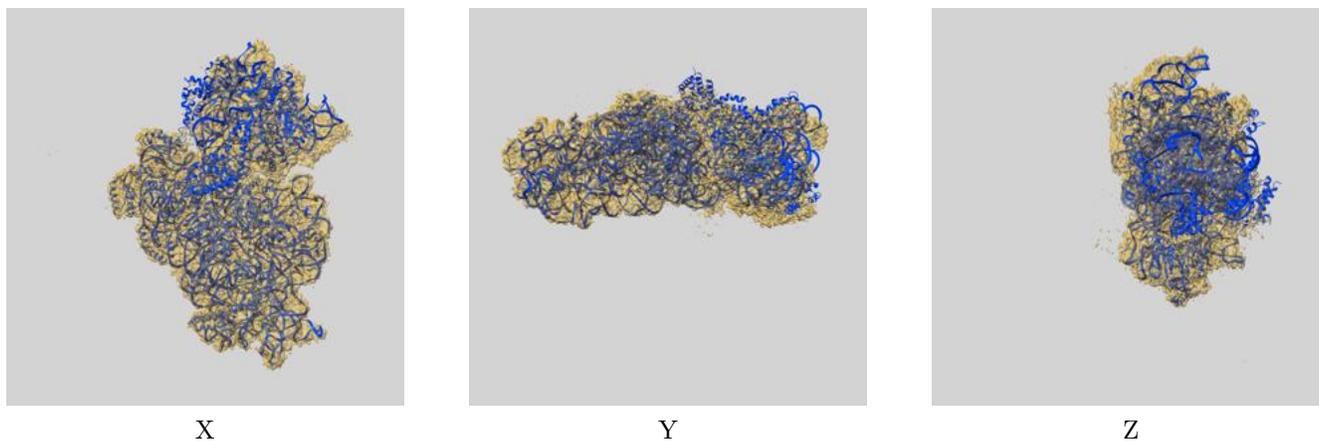
The images above show the 3D surface view of the map at the recommended contour level 0.108 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

9.2   Q-score mapped to coordinate model ⓘ
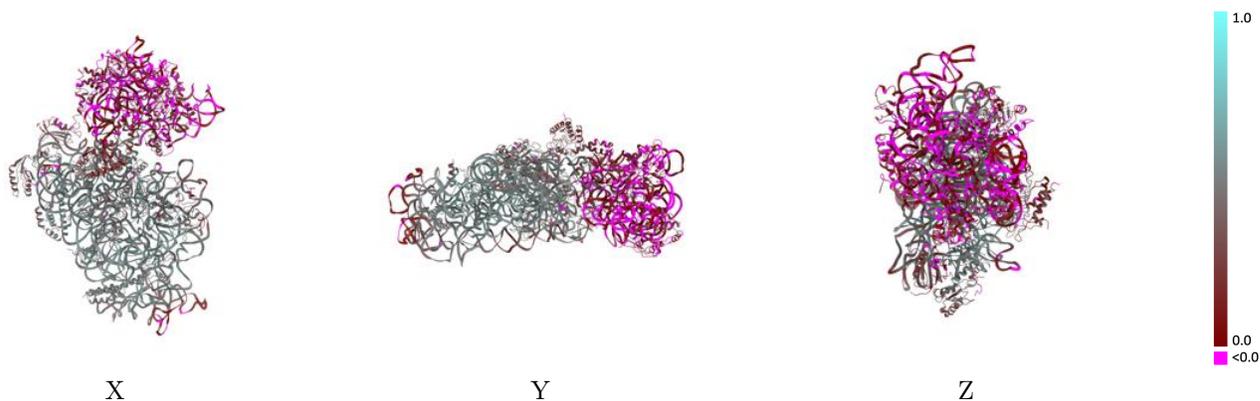
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 ⓘ
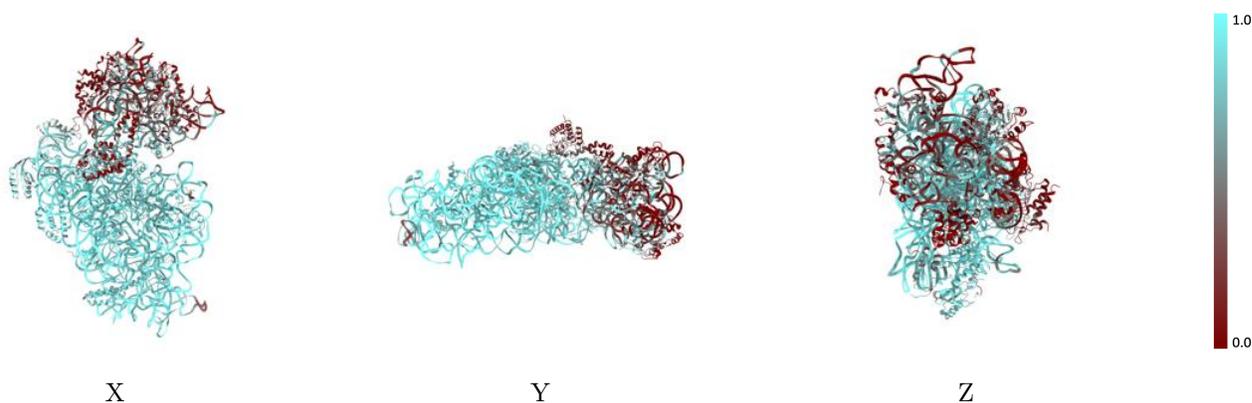
The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.108).

9.4　Atom inclusion ⓘ
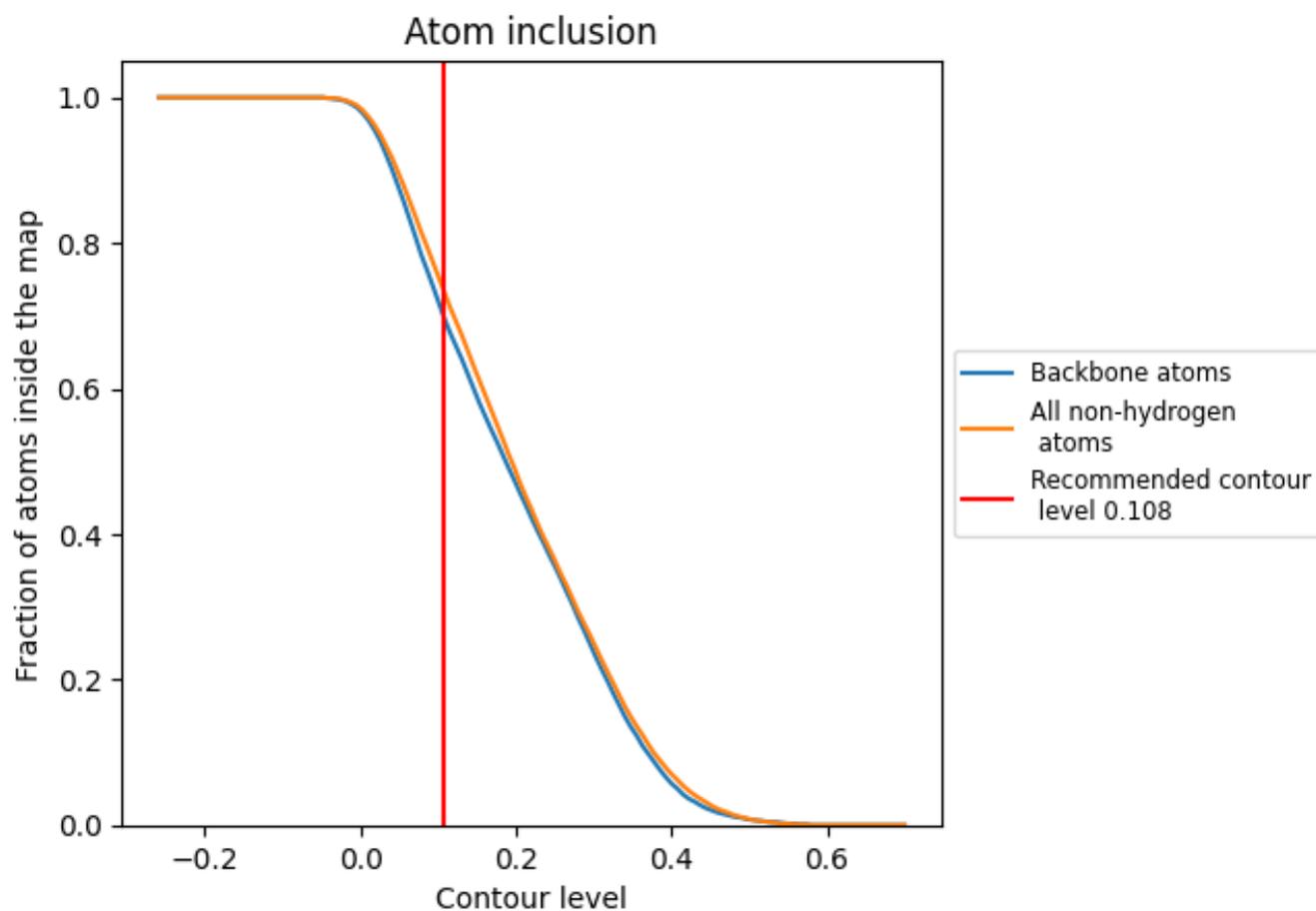
At the recommended contour level, 70% of all backbone atoms, 73% of all non-hydrogen atoms, are inside the map.

9.5　Map-model fit summary ⓘ

The table lists the average atom inclusion at the recommended contour level (0.108) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.7320	0.3280
A	0.8160	0.3590
B	0.2290	0.2320
C	0.4470	0.0940
D	0.8160	0.4240
E	0.8860	0.4920
F	0.7150	0.3270
G	0.0600	0.0420
H	0.8690	0.4750
I	0.3560	0.0340
J	0.2880	0.0340
K	0.7060	0.2880
L	0.8730	0.4690
M	0.3200	0.0270
N	0.3340	0.0420
O	0.8740	0.4690
P	0.9040	0.4970
Q	0.8730	0.4850
R	0.8300	0.4250
S	0.4510	0.0750
T	0.8600	0.4570
U	0.6850	0.2660

1.0

0.0
<0.0