wwPDB EM Validation Summary Report ⓘ

Nov 18, 2025 – 03:53 pm GMT

PDB ID	:	9SLJ / pdb_00009slj
EMDB ID	:	EMD-55003
Title	:	Chromosomal Passenger Complex in complex with H3T3ph Nucleosome (Double Occupancy)
Authors	:	Gireesh, A.; Abad, M.A.; Sotelo-Parrilla, P.; Jeyaprakash, A.A.
Deposited on	:	2025-09-04
Resolution	:	3.80 Å(reported)

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

|		
EMDB validation analysis	:	0.0.1.dev129
MolProbity	:	4-5-2 with Phenix2.0
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
EM percentile statistics	:	202505.v01 (Using data in the EMDB archive up until May 2025)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.46

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 3.80 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		10
Ramachandran outliers		0
Sidechain outliers		3.0%

Worse   *Better*

∎ Percentile relative to all structures

▯ Percentile relative to all EM structures

Metric	Model-Map Fit Percentile Ranks	Value
Q-score		0.397

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	-
Q-score	-	25397	10198 (3.30 - 4.30)

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	L	280	23% · 73%
1	O	280	22% · 73%
2	M	142	23% 76% 19% · ·
2	P	142	15% 70% 26% ·
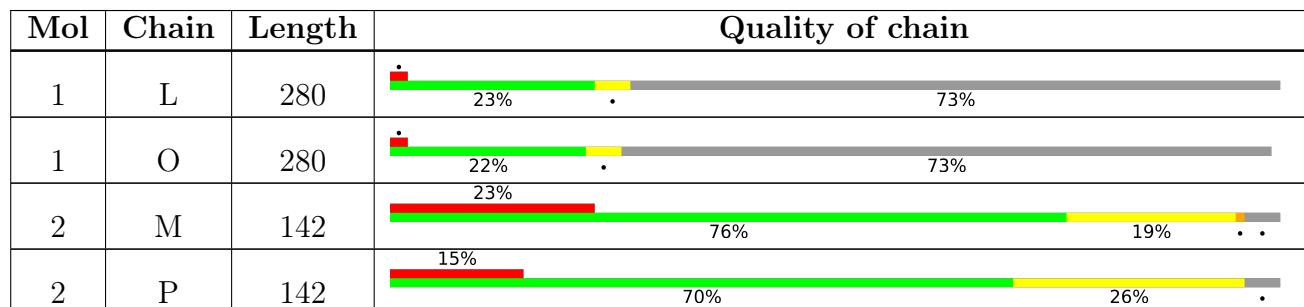
Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
3	N	918	95%
3	Q	918	95%
4	A	135	60% 12% 27%
4	E	135	59% 16% 25%
5	B	102	60% 18% 21%
5	F	102	59% 21% 20%
6	C	129	68% 19% 13%
6	G	129	71% 17% 12%
7	D	125	57% 19% 24%
7	H	125	66% 10% 24%
8	I	147	47% 53%
9	J	147	50% 50%
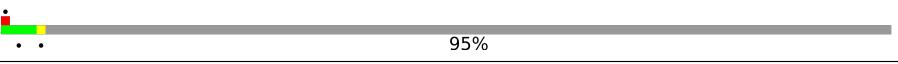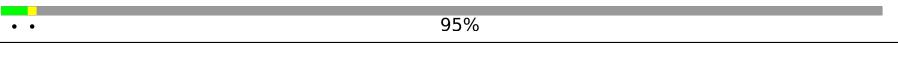
2   Entry composition ⓘ

There are 9 unique types of molecules in this entry. The entry contains 16390 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 Borealin.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	L	75	Total 633	C 400	N 120	O 112	S 1	0	0
1	O	75	Total 633	C 400	N 120	O 112	S 1	0	0

- Molecule 2 is a protein called Baculoviral IAP repeat-containing protein 5.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	M	137	Total 1118	C 712	N 191	O 207	S 8	0	0
2	P	137	Total 1118	C 712	N 191	O 207	S 8	0	0

- Molecule 3 is a protein called Inner centromere protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	N	42	Total 346	C 220	N 54	O 67	S 5	0	0
3	Q	42	Total 346	C 220	N 54	O 67	S 5	0	0

- Molecule 4 is a protein called Histone H3.2.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	A	98	Total 811	C 512	N 157	O 139	S 3	0	0
4	E	101	Total 831	C 525	N 161	O 142	S 3	0	0

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	102	ALA	GLY	engineered mutation	UNP P84233

Continued on next page...

Continued from previous page...

Chain	Residue	Modelled	Actual	Comment	Reference
E	102	ALA	GLY	engineered mutation	UNP P84233

- Molecule 5 is a protein called Histone H4.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	B	81	Total 648	C 410	N 126	O 111	S 1	0	0
5	F	82	Total 657	C 416	N 128	O 112	S 1	0	0

- Molecule 6 is a protein called Histone H2A type 1.

Mol	Chain	Residues	Atoms				AltConf	Trace
6	C	112	Total 862	C 545	N 169	O 148	0	0
6	G	113	Total 871	C 550	N 170	O 151	0	0

- Molecule 7 is a protein called Histone H2B type 1-J.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	D	95	Total 746	C 468	N 136	O 140	S 2	0	0
7	H	95	Total 746	C 468	N 136	O 140	S 2	0	0

- Molecule 8 is a DNA chain called DNA (147-MER).

Mol	Chain	Residues	Atoms					AltConf	Trace
8	I	147	Total 3034	C 1435	N 572	O 880	P 147	0	0

- Molecule 9 is a DNA chain called DNA (147-MER).

Mol	Chain	Residues	Atoms					AltConf	Trace
9	J	147	Total 2990	C 1422	N 540	O 882	P 146	0	0

3 Residue-property plots ⓘ

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

- Molecule 1: Borealin

Chain L:

23%   •   73%

MET A2 K12 R18 R19 N52 I56 E57 I58 L59 R60 L61 P62 K63 A64 L65 R66 E67 M68 N69 W70 Y73 L76 GLY GLY ASN LYS GLN ALA LEU GLU GLU ALA ALA THR ALA ASP ASP ILE GLU ILE ASN LYS LEU THR ALA GLU ALA ILE GLN THR PRO

LEU LYS SER ALA LYS THR ARG LYS VAL ILE GLN VAL ASP GLU MET ILE VAL LYS PRO THR PRO GLY LEU GLU VAL SER MET VAL LYS PRO THR PRO GLY LEU THR PRO ARG PHE ASP SER ARG VAL PHE LYS THR PRO GLY LEU ARG THR PRO ALA ALA GLY GLU ARG ILE TYR ASN ILE SER GLY ASN GLY SER PRO LEU ALA ASP SER LYS GLU ILE

ASN THR VAL THR PRO ALA VAL GLY ARG LEU GLU VAL SER MET VAL LYS PRO THR PRO GLY LEU THR PRO ARG PHE ASP SER ARG VAL PHE LYS THR PRO GLY LEU ARG THR PRO ALA ALA GLY GLU ARG ILE TYR ASN ILE SER GLY ASN GLY SER PRO LEU ALA ASP SER LYS GLU ILE

PHE LEU THR VAL PRO VAL GLY GLY GLU GLU SER LEU ARG LEU ALA SER ASP LEU GLN ARG HIS SER ILE ALA GLN LEU ASP LEU ASP PRO GLU ALA LEU GLY ASN ILE LYS LYS LEU SER ASN ARG LEU ALA GLN ILE ILE CYS SER SER ILE ARG THR HIS LYS

- Molecule 1: Borealin

Chain O:

22%   •   73%

MET A2 T13 R17 R18 R19 K20 L21 D27 F28 E31 V32 R35 K48 E49 I56 L59 K63 M68 N69 W70 Y73 L76 GLY GLY ASN LYS GLN ALA LEU GLU GLU ALA ALA THR ALA ASP ASP ILE GLU ILE ASN LYS LEU THR ALA GLU ALA ILE GLN THR PRO GLY LEU THR ALA

GLU ALA ILE GLN THR PRO LEU LYS SER ALA LYS THR ARG LYS VAL ILE GLN VAL ASP GLU MET ILE VAL LYS PRO THR PRO GLY LEU GLU VAL SER MET VAL LYS PRO THR PRO GLY LEU THR PRO ARG PHE ASP SER ARG VAL PHE LYS THR PRO GLY LEU ARG THR PRO ALA ALA GLY GLU ARG ILE TYR ASN ILE SER GLY ASN GLY SER PRO LEU

LYS ARG SER SER ARG ALA ASN THR VAL THR PRO ALA VAL GLY ARG LEU GLU VAL SER MET VAL LYS PRO THR PRO GLY LEU THR PRO ARG PHE ASP SER ARG VAL PHE LYS THR PRO GLY LEU ARG THR PRO ALA ALA GLY GLU ARG ILE TYR ASN ILE SER GLY ASN GLY SER PRO LEU

ALA ASP SER LYS GLU ILE PHE LEU THR VAL PRO VAL GLY GLY GLU GLU SER LEU ARG LEU ALA SER ASP LEU GLN ARG HIS SER ILE ALA GLN LEU ASP LEU ASP PRO GLU ALA LEU GLU LEU ASN ILE LYS LYS LEU SER ASN ARG LEU ALA GLN ILE ILE CYS SER SER ILE ARG THR HIS LYS

- Molecule 2: Baculoviral IAP repeat-containing protein 5

Chain M:

23%   76%   19%

MET GLY ALA PRO T5 Q11 H17 L28 E29 G30 C31 A32 C33 T34 R37 M38 I44 H45 T48 E49 N50 E51 P52 D53 F58 F59 C60 F61 L64 E65 G66 W67 E68 P69 D70 D71 D72 P73 I74 E75 E76 H77 K78 K79 S82 A85 F86 L87 S88 V89

K90 K91 Q92 L96 T97 L98 G99 E100 K103 L104 D105 R106 E107 R108 A109 K110 N111 K112 K115 E116 K120 K121 K122 E125 E126 K129 K130 M141 ASP

• Molecule 2: Baculoviral IAP repeat-containing protein 5

Chain P:

15%

70%

26%

MET GLY ALA PRO T5 W10 Q11 P12 F13 L14 K15 D16 H17 W25 L28 E29 G30 P35 E36 R37 M38 A39 E40 F43 T48 E49 N50 E51 L54 F58 F59 C60 E63 L64 E65 G66 W67 E68 I74 K79 G83 C84 A85 F86 L87 S88 V89 K90

K91 L98 G99 E100 K103 R106 E107 R108 A109 K110 N111 K112 K115 E116 T117 K120 K121 K122 E123 K129 K130 R133 A134 A139 A140 M141 ASP

• Molecule 3: Inner centromere protein

Chain N:

95%

MET GLY THR THR A5 P6 G7 P8 L14 Q17 K18 L19 M20 M26 D27 N28 V32 W33 L34 E35 E36 I37 T46 ARG GLU PHE SER LYS GLU GLU LEU MET PRO LYS THR PRO SER GLN LYS ASN ARG ARG LYS LYS ARG ARG ILE SER TYR VAL GLN ASP GLU ASN

ARG ASP PRO ILE ARG ARG LEU SER ARG ARG LYS ARG SER SER GLN LEU LEU SER SER ARG ARG LEU ARG SER LYS ASP SER SER VAL GLU LYS LEU ALA THR VAL VAL GLY GLU ASN GLY SER VAL LEU ARG ARG VAL THR ALA ALA ALA ALA ALA ALA THR MET ALA LEU

ALA ALA PRO SER PRO SER PRO THR PRO GLU PRO THR PRO THR ALA PRO THR PRO GLY SER SER PRO GLN THR MET LEU THR LYS LYS PRO GLU ASP ASN HIS THR GLN CYS GLN LEU VAL PRO VAL VAL GLU ILE GLY ILE SER GLU ARG GLN ASN ALA GLU GLN HIS VAL THR GLN LEU MET SER THR GLU PRO LEU PRO ARG GLU LEU SER PRO

THR PRO ALA SER ALA THR ALA PRO THR SER SER GLN GLY ILE PRO THR SER ASP GLU GLU SER THR PRO LYS LYS SER LYS ALA ARG ILE LEU SER ILE THR VAL SER SER LEU MET ALA THR PRO GLN ASP LYS GLY GLN GLY VAL THR GLY ARG SER ALA SER LYS LEU ARG

ILE ALA GLN VAL SER PRO GLY PRO ARG ASP SER PRO ALA PHE PRO ASP SER PRO TRP ARG GLU VAL LEU ALA PRO ILE LEU PRO ASP ASN PHE SER THR PRO THR GLY SER ARG THR ASP SER GLN SER VAL ARG HIS SER PRO ILE ALA PRO SER SER PRO SER GLN VAL LEU

ALA GLN LYS TYR LEU VAL ALA LYS GLN SER GLU GLU SER VAL VAL ARG ARG ALA SER ARG ARG LEU ALA LYS LYS THR ALA GLU GLY PRO ALA SER GLY PRO ILE LEU PRO ASP PHE THR GLY SER ARG LEU LYS LYS ALA GLU LEU ASN VAL GLN VAL PRO GLN LYS VAL GLY SER GLU GLY LYS GLU PRO

PRO GLU GLU ALA PRO VAL ALA ALA ALA PRO GLU VAL PRO GLU ASN GLY ASN ASN SER SER PRO HIS ASN ASP THR GLU ILE ALA ASN SER THR PRO ASN PRO LYS PRO ALA ALA SER GLY PRO SER PRO LYS THR PRO SER ALA GLN GLU GLU LYS THR ASP GLN ALA ASP

GLY PRO ARG GLU PRO PRO GLN SER ALA ARG ARG LYS ARG SER TYR LYS GLN ALA VAL MET SER GLU LEU ASP ASP GLN GLN HIS LEU GLU ASP GLU LEU GLN PRO PRO ARG SER LYS THR PRO SER SER PRO GLU CYS PRO ALA SER LYS VAL VAL ARG PRO LEU ARG THR PHE LEU HIS THR

VAL GLN ARG ASN GLN MET LEU MET THR PRO THR SER ALA PRO ARG SER VAL MET LYS SER PHE ILE LYS ARG ASN THR PRO LEU ARG MET ASP PRO LYS GLN GLU GLU GLN GLU LYS LYS LEU GLU ILE GLU GLN ARG ARG GLU LEU ASN LEU ARG ARG LYS GLU GLU GLU ALA GLU GLN GLU LEU ARG ARG GLN LYS

VAL GLU GLU ASP LYS ARG ARG ARG LEU GLU GLU VAL LYS LEU ARG ARG GLU VAL GLU ALA ARG GLU VAL GLU MET GLU LYS ILE GLU GLN GLU LYS PHE ALA GLN ILE ASP GLU LYS THR GLU LYS ALA GLU ARG LYS ARG LEU GLU ASP GLU GLU LYS GLN LYS VAL ARG GLU ARG GLN LYS VAL GLU ARG LEU

ALA GLU GLU LYS ALA ARG LEU GLU GLN ALA GLU GLU ALA LYS LYS ALA ALA ALA ALA LYS MET GLU VAL GLU VAL ALA ARG ARG GLU LYS GLN LYS VAL GLN ALA ARG GLU GLU ARG LEU ARG TRP LEU GLN GLN LYS GLU GLU LYS GLN GLN LYS ALA LYS LYS GLU GLU GLN ARG LEU ARG LYS ALA

ALA GLU ALA LYS ARG LEU GLU GLN GLU GLN ARG GLU GLN LEU ARG ARG GLU GLU ARG LYS ARG GLN GLU GLU GLN ARG LEU GLN ALA GLU GLU LEU ARG ARG LEU ARG ARG LEU ALA GLU GLU LYS GLN LEU ALA GLU GLU ARG LEU ARG LYS GLU LEU GLN

• Molecule 3: Inner centromere protein

Chain Q: 95%

• Molecule 4: Histone H3.2

Chain A:

60%   12% • 27%

ALA ARG THR LYS GLN THR ALA ARG LYS SER THR GLY LYS LYS ALA PRO ARG LYS GLN LEU ALA THR LYS ALA ALA ARG LYS SER ALA PRO ALA THR GLY GLY VAL LYS **K37 L48 I51 T58 L61 I74 Q85 S86 S87 M90 N108 I112 H113 A114 K115**

R116 V117 T118 I119 M120 P121 K122 R134 ALA
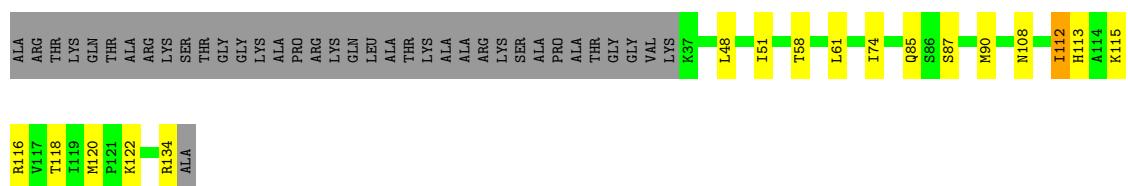
• Molecule 4: Histone H3.2

Chain E:

59%   16%   25%

ALA ARG THR LYS GLN THR ALA ARG LYS SER THR GLY LYS LYS ALA PRO ARG LYS GLN LEU ALA THR LYS ALA ALA ARG LYS SER ALA PRO ALA THR GLY **G34 K37 L48 L61 K64 Q68 R69 R72 L82 V89 E94 V101 D106 K115**

T118 I119 M120 P121 Q125 L126 I130 R131 G132 E133 R134 ALA

• Molecule 5: Histone H4

Chain B:

60%   18% • 21%

SER GLY ARG GLY LYS GLY GLY LYS GLY LEU GLY LYS GLY GLY ALA LYS ARG HIS ARG LYS **V21 D24 N25 T30 A33 R39 G42 R45 I50 V57 V60 F61 L62 E63 I66 T73 R78 K79 T82 L90 K91 R92 R95 G101**

GLY
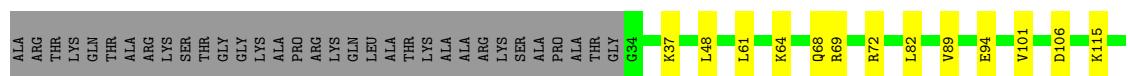
• Molecule 5: Histone H4

Chain F:

59%   21% • 20%

SER GLY ARG GLY LYS GLY GLY LYS GLY LEU GLY LYS GLY GLY ALA LYS ARG HIS ARG **K20 V21 L22 N25 K31 P32 R35 R36 L37 A38 R39 R40 I50 Y51 E52 E53 V57 L58 K59 H75 T82 A83 M84 Y88 R92 T96 L97 Y98 G101** GLY

• Molecule 6: Histone H2A type 1

Chain C:

68%   19%   13%

SER GLY ARG GLY LYS GLN GLY GLY **K9 K13 H31 R35 K36 V49 V54 L55 E56 Y57 L63 E64 L65 K74 I79 H82 A86 I87 D90 E91 T101 I102 A103 V107 N110 V114 T120** GLU SER HIS HIS LYS ALA LYS GLY LYS

• Molecule 6: Histone H2A type 1

Chain G:

71%   17%   12%

SER GLY ARG GLY LYS GLN GLY GLY **K9 K13 A14 K36 V49 V54 L55 E56 K75 T76 I79 P80 R81 L85 A86 I87 R88 N89 K95 L96 T101 I102 L108 Q112 A113 V114 K118 K119 T120 E121** SER HIS HIS LYS ALA LYS GLY LYS

• Molecule 7: Histone H2B type 1-J

Chain D:

57%   19%   24%

PRO GLU PRO ALA LYS SER ALA PRO ALA PRO LYS LYS GLY SER LYS LYS ALA VAL THR LYS ALA GLN LYS LYS ASP GLY LYS LYS ARG LYS R31 I39 Y42 K43 V44 L45 K46 Q47 I61 D68 I69 F70 E76 K85 T90 S91 R92 E93 I94 Q95 V98 R99

L100 L101 L102 V111 S112 E113 K116 T119 K120 Y121 K125
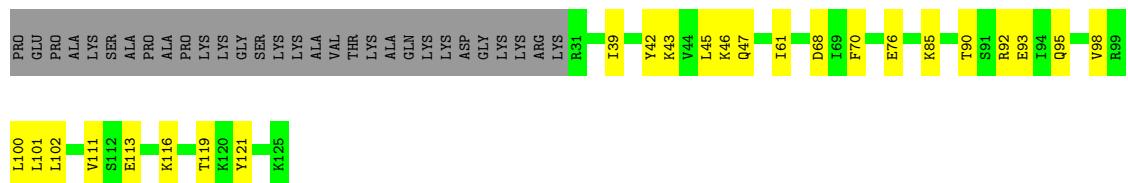
• Molecule 7: Histone H2B type 1-J

Chain H:

66%   10%   24%

PRO GLU PRO ALA LYS SER ALA PRO ALA PRO LYS LYS GLY SER LYS LYS ALA VAL THR LYS ALA GLN LYS LYS ASP GLY LYS LYS ARG LYS R31 S32 R33 K46 M59 R72 E76 L80 R92 E93 V98 R99 L100 K108 Y121 K125

• Molecule 8: DNA (147-MER)

Chain I:

47%   53%

A0 C1 A2 G3 G4 A5 T6 G7 T8 A9 T10 A11 T12 A13 T14 G15 T16 G17 A18 C19 A20 C25 C26 T27 G28 G29 A30 T34 A35 G36 G37 G38 A39 G40 T41 A42 A43 T44 C47 C48 G54 G55 T56 A59 A60 A61 C62 G63 C64 G65 G66 G67 A70

C76 G77 T78 G81 T86 T87 T88 A89 A90 A101 T104 G105 T108 A109 A115 A116 T117 T118 G119 A120 G121 C122 G123 C128 G129 G130 C131 A132 T139 T140 C144 A145 G146
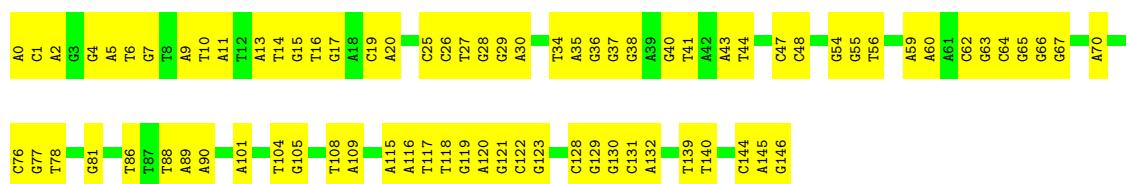
• Molecule 9: DNA (147-MER)

Chain J:

50%   50%

C147 T148 G149 G150 A151 G152 A153 A154 T155 C156 C157 C158 C163 C164 G165 A166 G171 A175 A176 T177 T178 T181 C182 G183 T184 A185 G186 A187 A205 A206 A207 C208 G209 C212 G213 T214 A215 C216 G217 C218 G219 T223 C224 C228 G229 T235 A236 G245 G246 G247

G248 A249 T250 T251 A252 C253 T254 C255 C256 C257 T258 A259 G260 G267 G268 T273 G274 T275 C276 A277 T282 A283 T284 A287 T288 C289 C290 T291 G292 T293

4 Experimental information ⓘ

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	75653	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 $(e^-/\text{Å}^2)$	40	Depositor
Minimum defocus (nm)	500	Depositor
Maximum defocus (nm)	2600	Depositor
Magnification	Not provided	
Image detector	FEI FALCON IV (4k x 4k)	Depositor
Maximum map value	0.025	Depositor
Minimum map value	-0.009	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.001	Depositor
Recommended contour level	0.001	Depositor
Map size (Å)	279.168, 279.168, 279.168	wwPDB
Map dimensions	384, 384, 384	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.727, 0.727, 0.727	Depositor

5   Model quality (i)

5.1   Standard geometry (i)

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#$|Z|$ >5	RMSZ	#$|Z|$ >5
1	L	0.10	0/641	0.28	0/857
1	O	0.13	0/641	0.38	0/857
2	M	0.11	0/1147	0.30	0/1542
2	P	0.14	0/1147	0.44	0/1542
3	N	0.11	0/352	0.33	0/474
3	Q	0.13	0/352	0.40	0/474
4	A	0.18	0/823	0.38	0/1104
4	E	0.19	0/843	0.35	0/1130
5	B	0.18	0/655	0.41	0/878
5	F	0.17	0/664	0.39	0/889
6	C	0.18	0/872	0.36	0/1174
6	G	0.17	0/881	0.37	0/1186
7	D	0.19	0/757	0.43	0/1015
7	H	0.17	0/757	0.37	0/1015
8	I	0.21	0/3408	0.39	0/5263
9	J	0.20	0/3349	0.36	0/5162
All	All	0.18	0/17289	0.37	0/24562

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 (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.

WORLDWIDE
wwPDB
PROTEIN DATA BANK

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	L	633	0	663	6	0
1	O	633	0	663	12	0
2	M	1118	0	1091	23	0
2	P	1118	0	1091	26	0
3	N	346	0	334	6	0
3	Q	346	0	334	7	0
4	A	811	0	853	15	0
4	E	831	0	878	17	0
5	B	648	0	693	19	0
5	F	657	0	706	21	0
6	C	862	0	935	19	0
6	G	871	0	941	18	0
7	D	746	0	771	20	0
7	H	746	0	771	11	0
8	I	3034	0	1649	68	0
9	J	2990	0	1652	55	0
All	All	16390	0	14025	299	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 10.

The worst 5 of 299 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)
4:A:112:ILE:HD13	6:G:114:VAL:HG11	1.67	0.76
6:G:79:ILE:HD12	6:G:81:ARG:H	1.56	0.71
6:C:65:LEU:HB3	6:C:86:ALA:HB1	1.73	0.70
6:G:118:LYS:HD3	6:G:120:THR:H	1.60	0.67
1:L:68:MET:HE1	1:L:73:TYR:HB2	1.77	0.67

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	
1	L	73/280 (26%)	71 (97%)	2 (3%)	0	100	100
1	O	73/280 (26%)	71 (97%)	2 (3%)	0	100	100
2	M	135/142 (95%)	132 (98%)	3 (2%)	0	100	100
2	P	135/142 (95%)	130 (96%)	5 (4%)	0	100	100
3	N	40/918 (4%)	38 (95%)	2 (5%)	0	100	100
3	Q	40/918 (4%)	37 (92%)	3 (8%)	0	100	100
4	A	96/135 (71%)	94 (98%)	2 (2%)	0	100	100
4	E	99/135 (73%)	98 (99%)	1 (1%)	0	100	100
5	B	79/102 (78%)	77 (98%)	2 (2%)	0	100	100
5	F	80/102 (78%)	77 (96%)	3 (4%)	0	100	100
6	C	110/129 (85%)	108 (98%)	2 (2%)	0	100	100
6	G	111/129 (86%)	106 (96%)	5 (4%)	0	100	100
7	D	93/125 (74%)	88 (95%)	5 (5%)	0	100	100
7	H	93/125 (74%)	91 (98%)	2 (2%)	0	100	100
All	All	1257/3662 (34%)	1218 (97%)	39 (3%)	0	100	100

There are no Ramachandran outliers to report.

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	
1	L	69/242 (28%)	68 (99%)	1 (1%)	62	75
1	O	69/242 (28%)	68 (99%)	1 (1%)	62	75
2	M	120/123 (98%)	117 (98%)	3 (2%)	42	62
2	P	120/123 (98%)	117 (98%)	3 (2%)	42	62
3	N	39/817 (5%)	38 (97%)	1 (3%)	41	61
3	Q	39/817 (5%)	38 (97%)	1 (3%)	41	61
4	A	86/110 (78%)	83 (96%)	3 (4%)	31	54

Continued from previous page...

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
4	E	88/110 (80%)	85 (97%)	3 (3%)	32	55
5	B	67/78 (86%)	64 (96%)	3 (4%)	23	47
5	F	68/78 (87%)	66 (97%)	2 (3%)	37	58
6	C	87/98 (89%)	84 (97%)	3 (3%)	32	55
6	G	88/98 (90%)	83 (94%)	5 (6%)	17	43
7	D	81/104 (78%)	78 (96%)	3 (4%)	29	53
7	H	81/104 (78%)	80 (99%)	1 (1%)	67	77
All	All	1102/3144 (35%)	1069 (97%)	33 (3%)	37	58

5 of 33 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	O	21	LEU
2	P	58	PHE
3	Q	38	GLN
6	C	101	THR
6	C	64	GLU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 11 such sidechains are listed below:

Mol	Chain	Res	Type
2	P	17	HIS
2	P	80	HIS
3	Q	38	GLN
3	Q	25	ASN
4	E	85	GLN

5.3.3   RNA ⓘ

There are no RNA molecules in this entry.

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 ⓘ

There are no ligands in this entry.

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-55003. 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
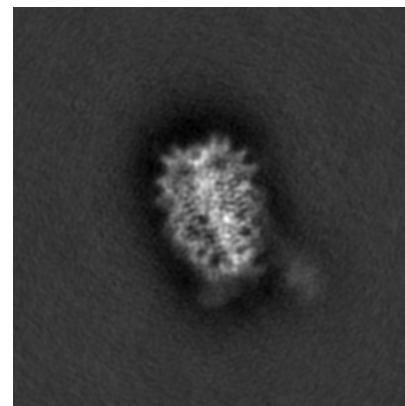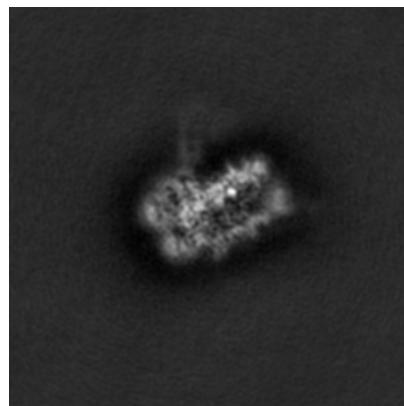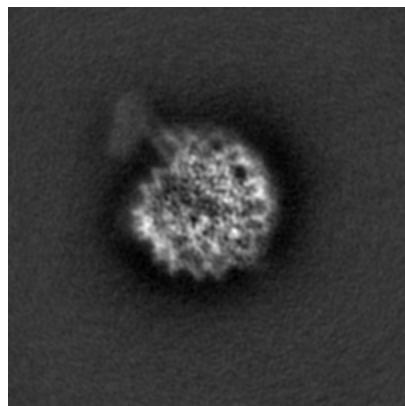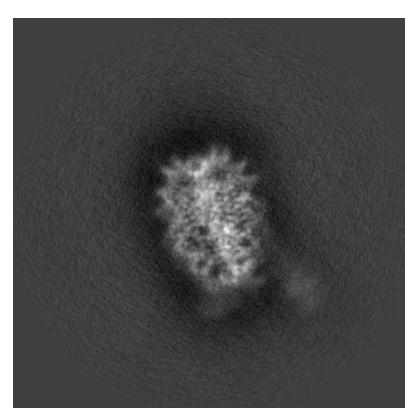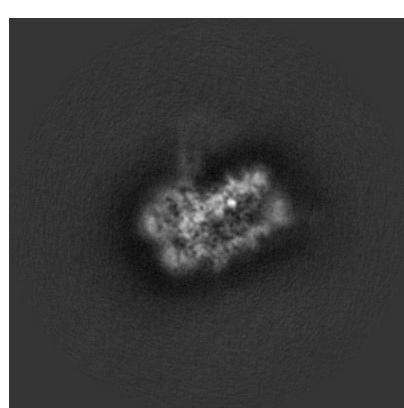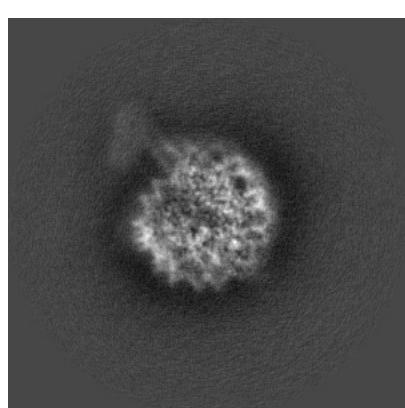
The images above show the map projected in three orthogonal directions.

6.2 Central slices ⓘ
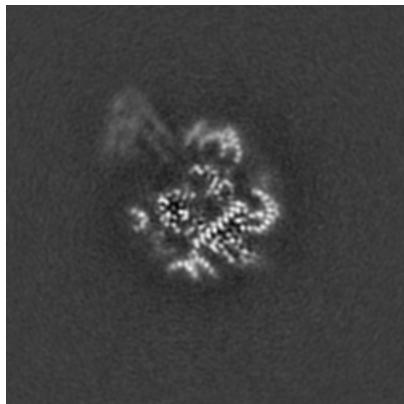
6.2.1 Primary map
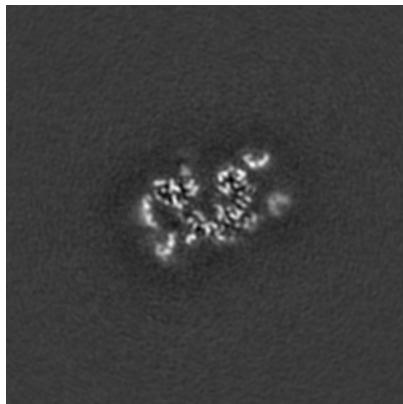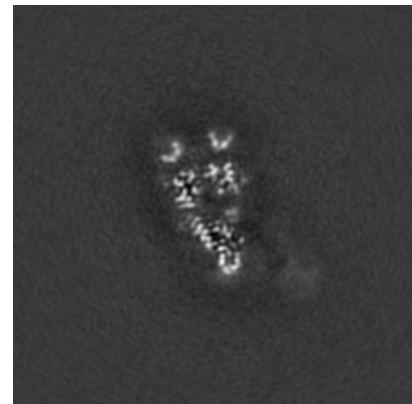
| X Index: 192 | Y Index: 192 | Z Index: 192 |

6.2.2 Raw map
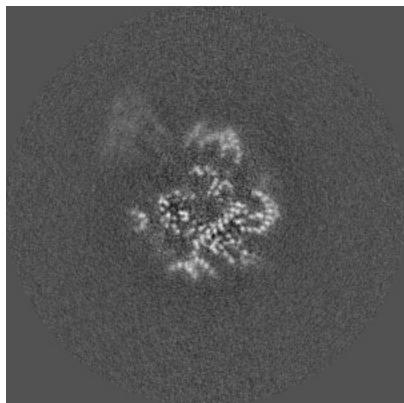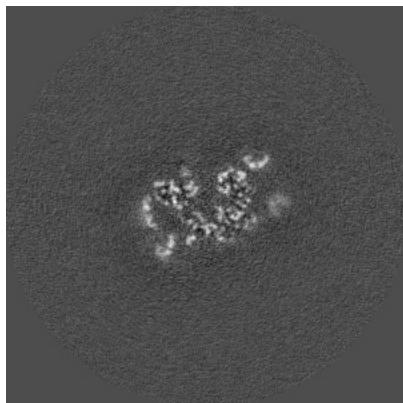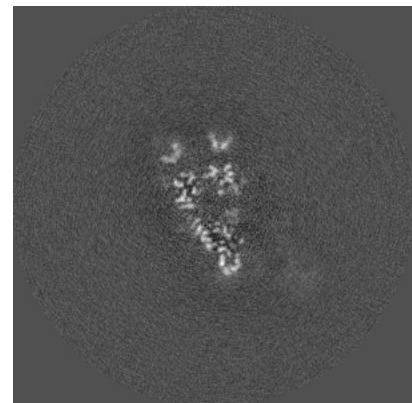
| X Index: 192 | Y Index: 192 | Z Index: 192 |

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

6.3   Largest variance slices ⓘ

6.3.1   Primary map
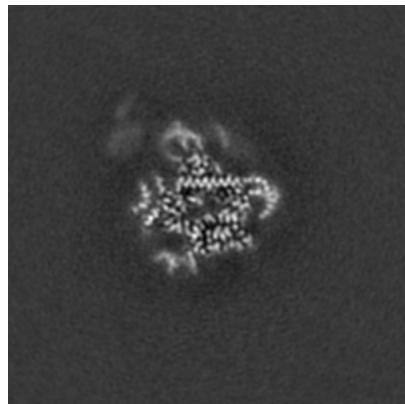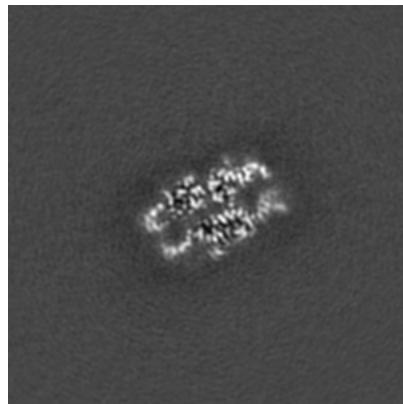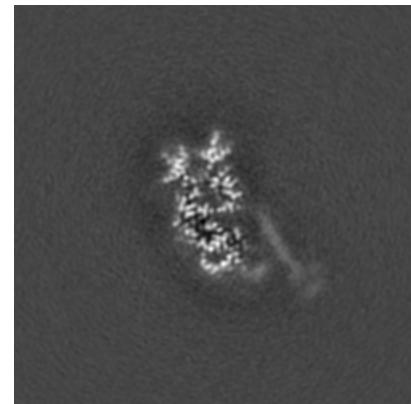
| X Index: 205 | Y Index: 210 | Z Index: 181 |

6.3.2   Raw map
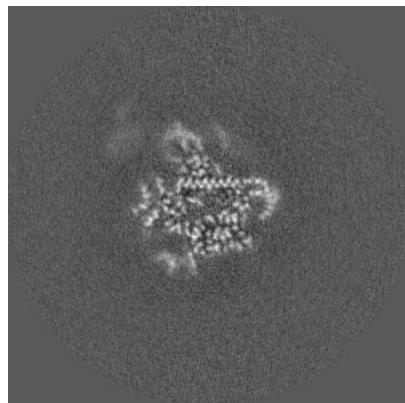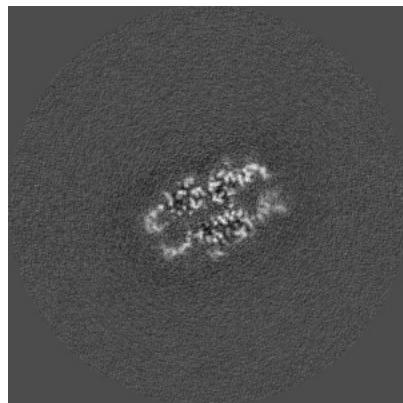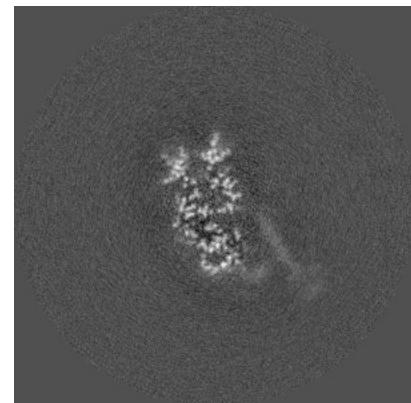
| X Index: 205 | Y Index: 210 | Z Index: 181 |

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
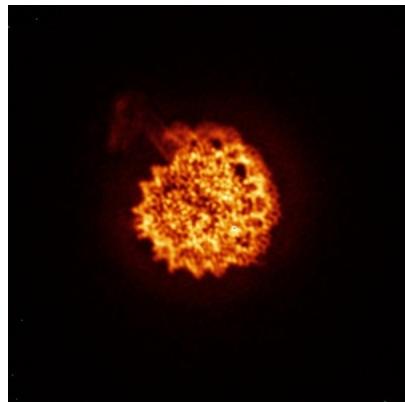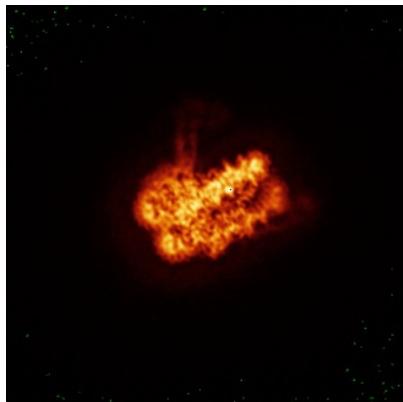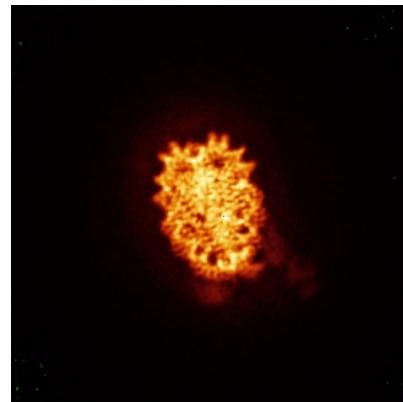
X	Y	Z

6.4.2 Raw map

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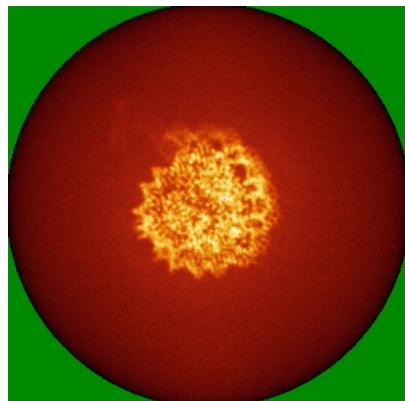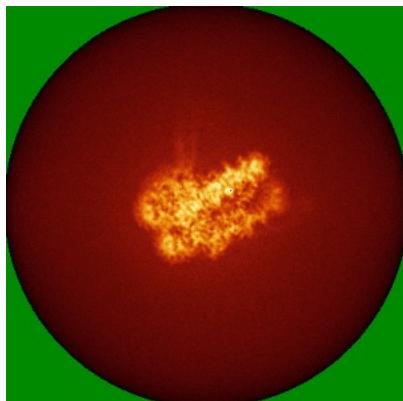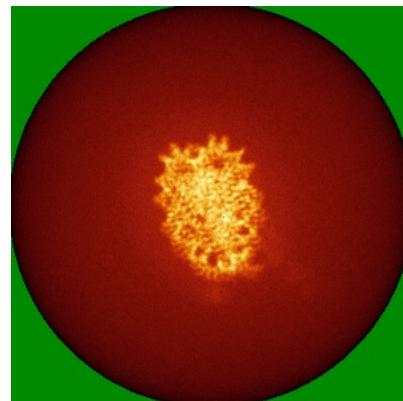
The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

6.5 Orthogonal surface views (i)

6.5.1 Primary map

X   Y   Z
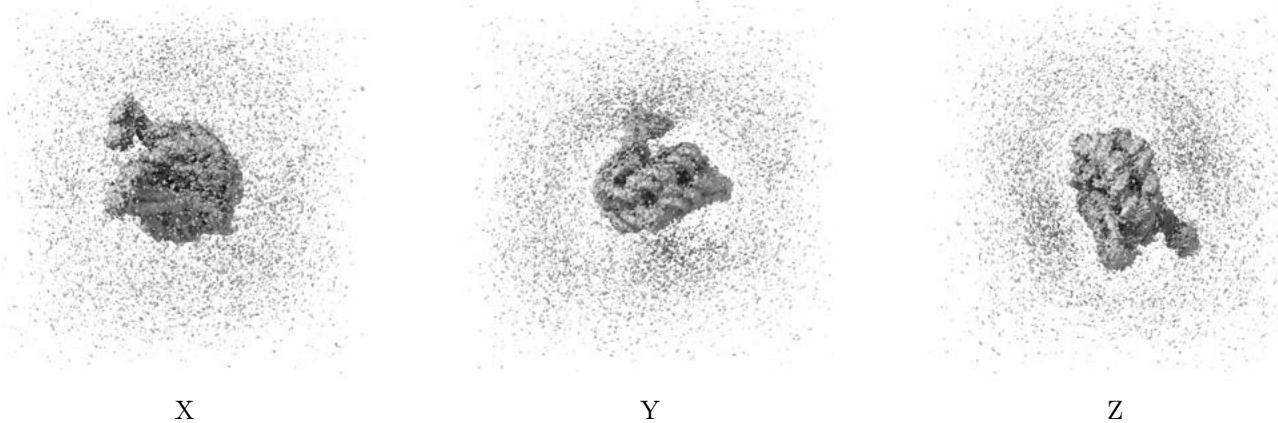
The images above show the 3D surface view of the map at the recommended contour level 0.001. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map

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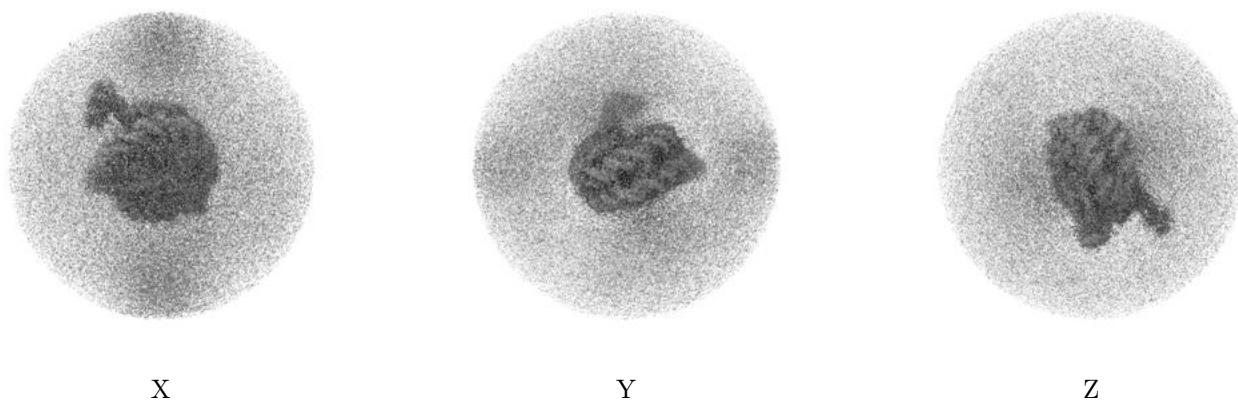
These images show the 3D surface of the raw map. The raw map's contour level was selected so that its surface encloses the same volume as the primary map does at its recommended contour level.

6.6 Mask visualisation (i)

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

7 Map analysis ⓘ

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

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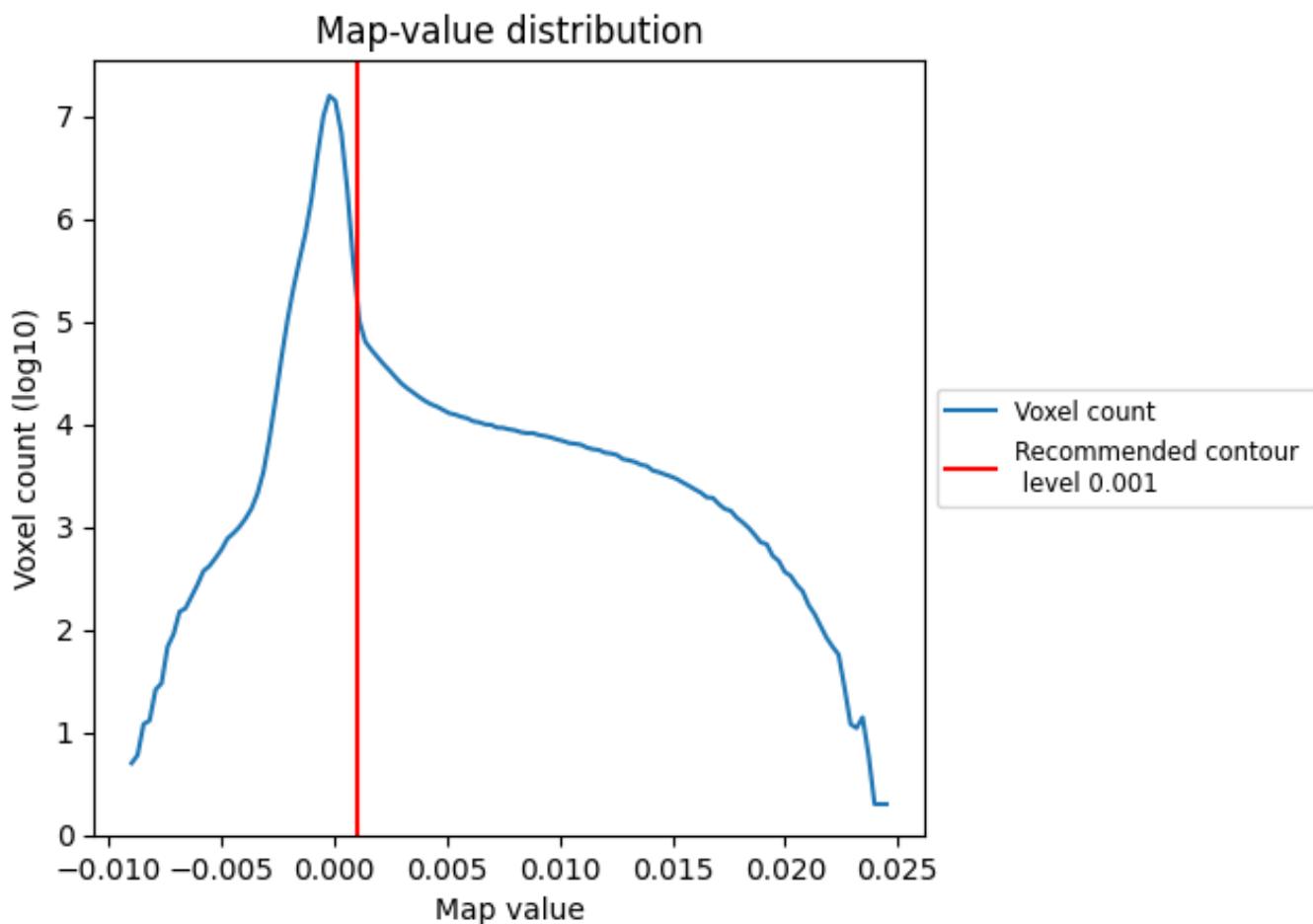
The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

7.2   Volume estimate ⓘ
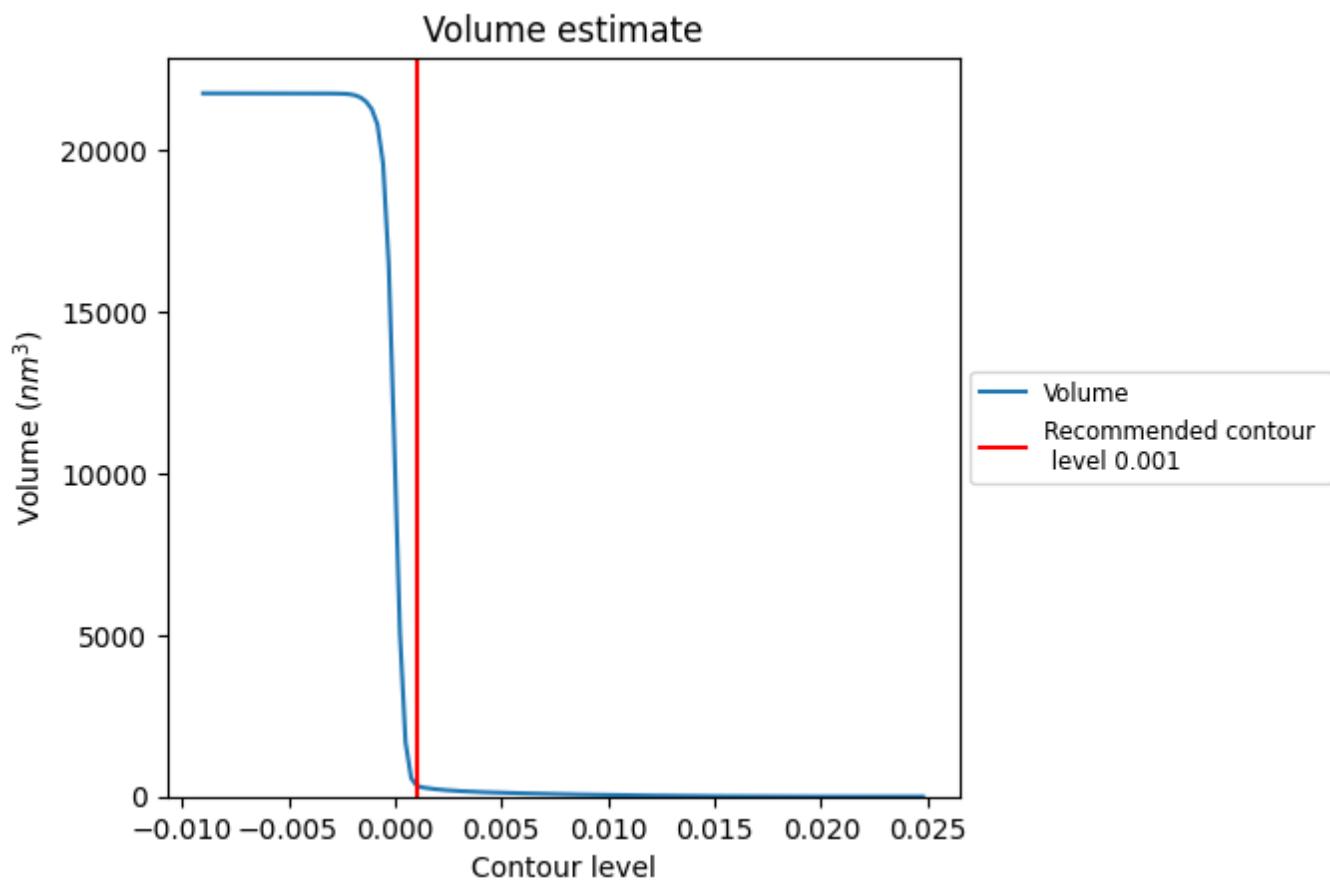
The volume at the recommended contour level is 359 nm^3; this corresponds to an approximate mass of 324 kDa.

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 ⓘ
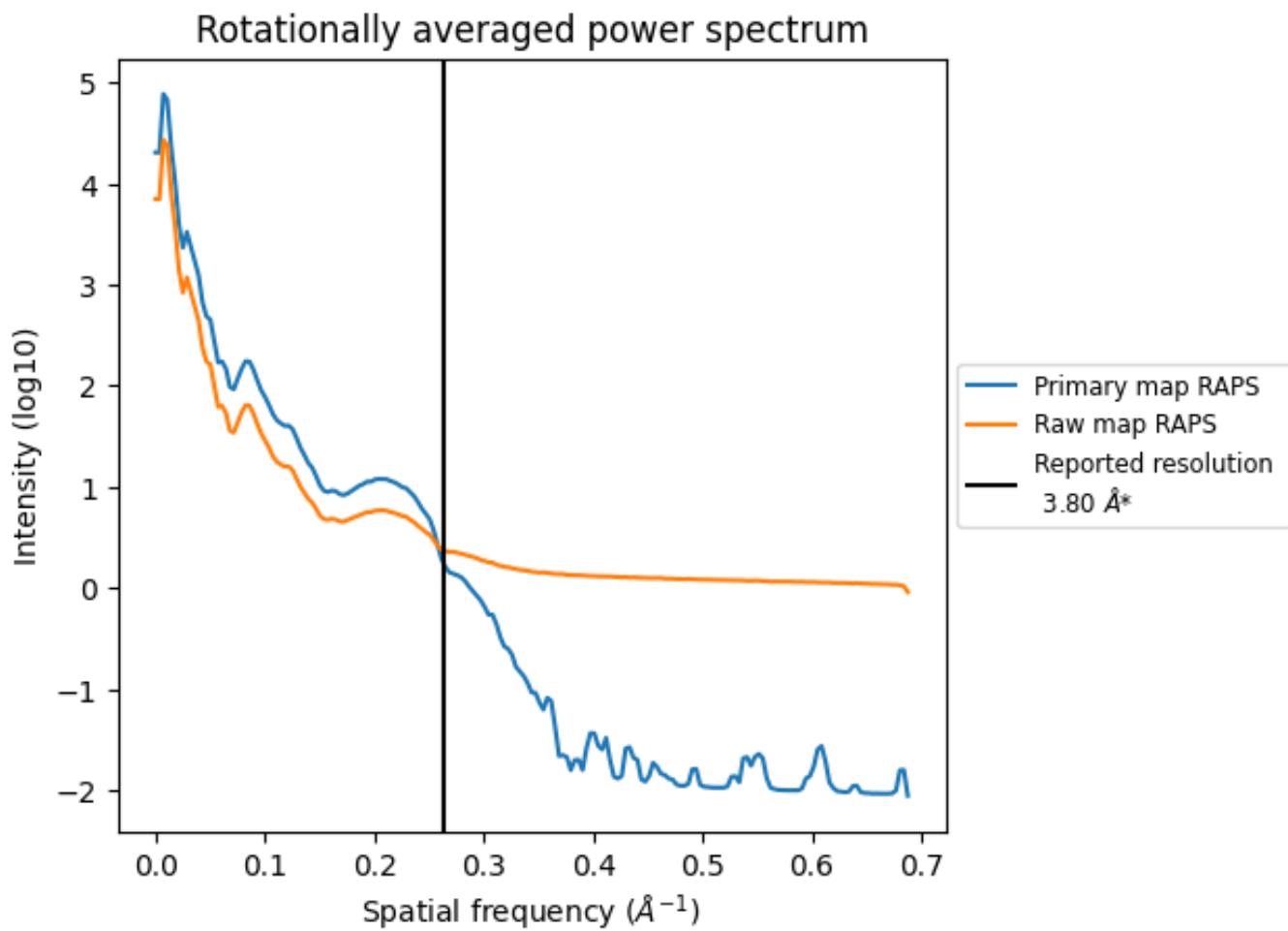
*Reported resolution corresponds to spatial frequency of 0.263 Å^{-1}

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 ⓘ
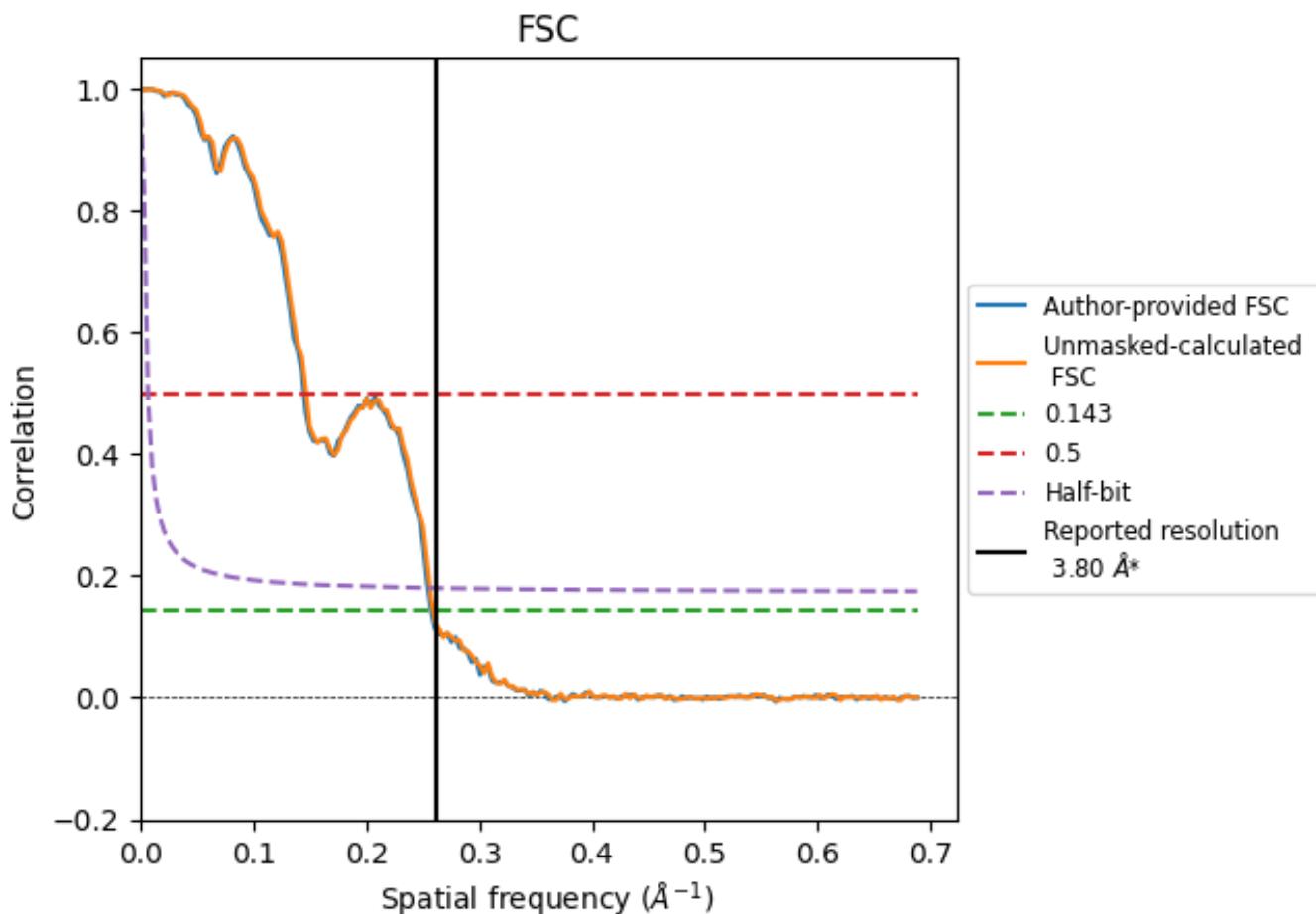
*Reported resolution corresponds to spatial frequency of 0.263 Å^{-1}

8.2 Resolution estimates (i)

Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.80	-	-
Author-provided FSC curve	3.88	6.89	3.92
Unmasked-calculated*	3.85	6.79	3.89

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps.

9 Map-model fit ⓘ

This section contains information regarding the fit between EMDB map EMD-55003 and PDB model 9SLJ. Per-residue inclusion information can be found in section 3 on page 6.

9.1 Map-model overlay ⓘ

X	Y	Z
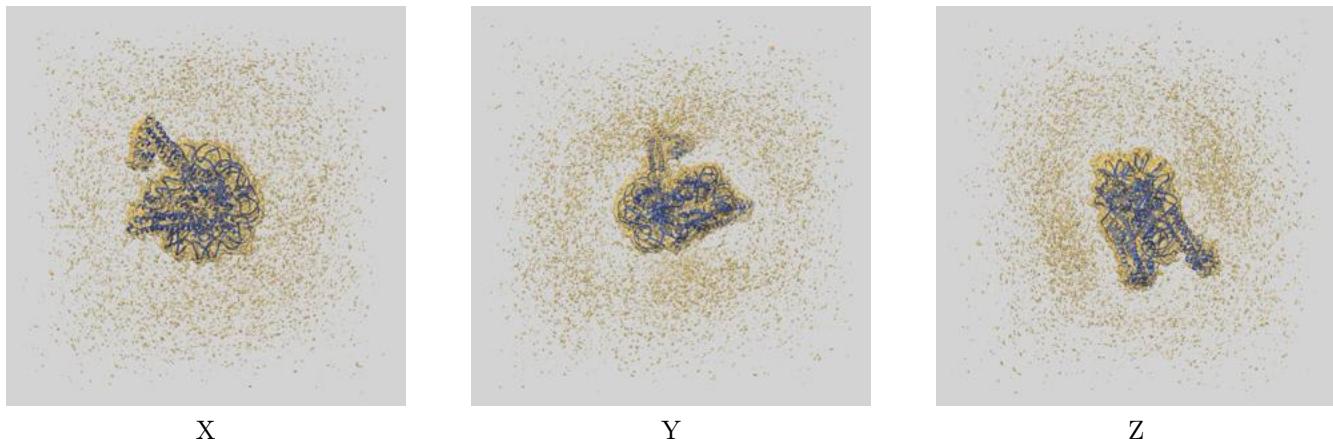
The images above show the 3D surface view of the map at the recommended contour level 0.001 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

9.2　Q-score mapped to coordinate model ⓘ
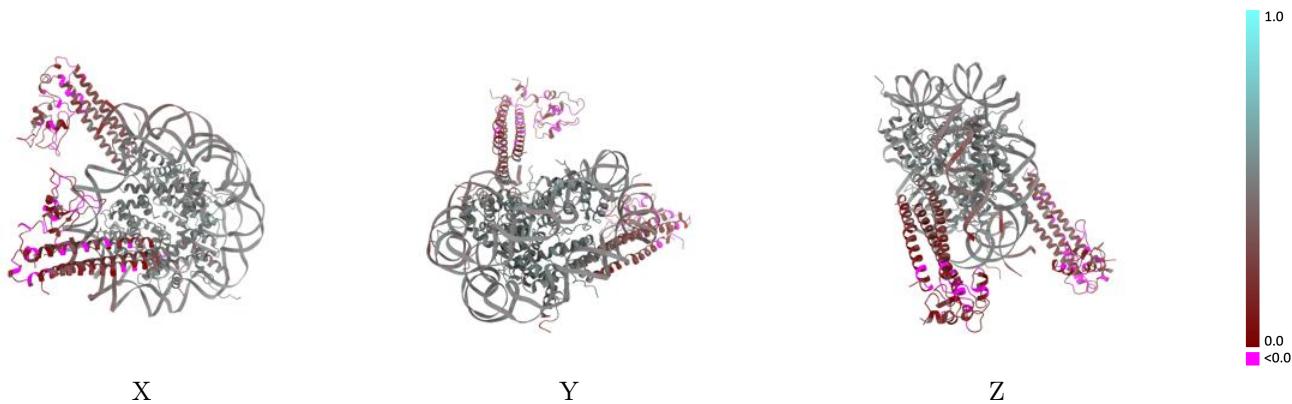
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 ⓘ
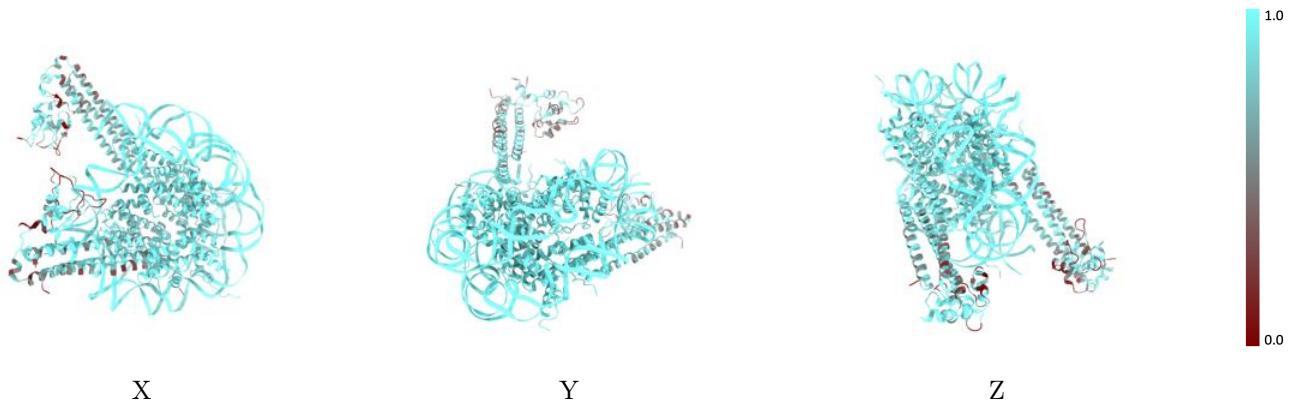
The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.001).

9.4 Atom inclusion ⓘ
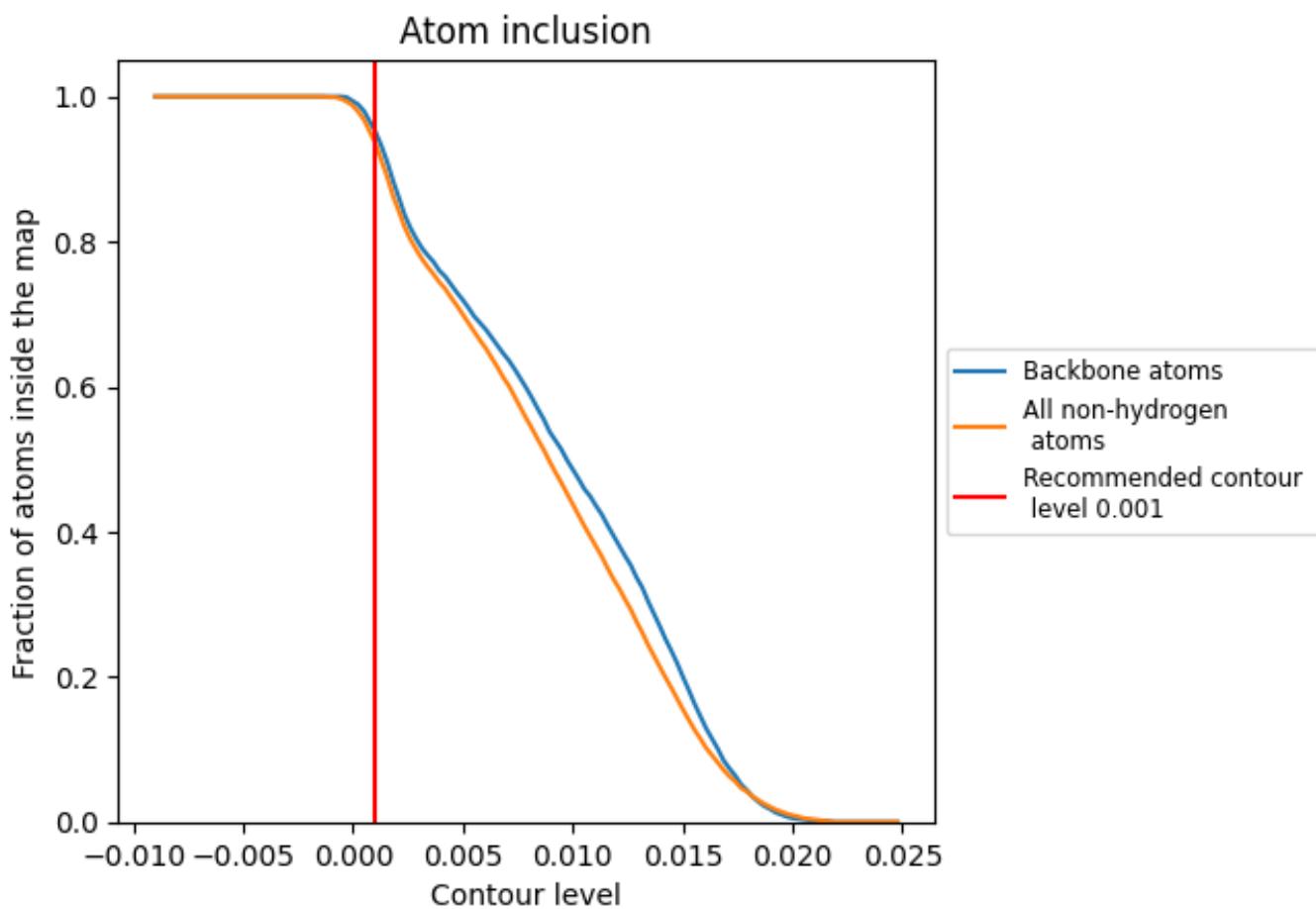
At the recommended contour level, 95% of all backbone atoms, 94% of all non-hydrogen atoms, are inside the map.

9.5   Map-model fit summary ⓘ

The table lists the average atom inclusion at the recommended contour level (0.001) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.9360	0.3970
A	0.9960	0.5020
B	1.0000	0.5050
C	0.9920	0.4920
D	0.9970	0.4880
E	0.9840	0.4910
F	0.9940	0.5000
G	0.9930	0.5010
H	0.9970	0.4900
I	0.9980	0.4550
J	1.0000	0.4570
L	0.8080	0.2230
M	0.6650	0.1200
N	0.6880	0.1790
O	0.8460	0.2610
P	0.7880	0.1320
Q	0.8050	0.1550
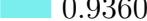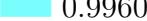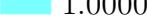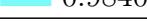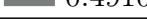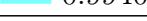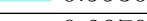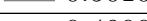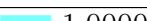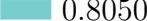
1.0

0.0
<0.0