WORLDWIDE wwPDB PROTEIN DATA BANK

Full wwPDB EM Validation Report (i)

Feb 12, 2024 – 03:11 pm GMT

|		
PDB ID	:	8CG4
EMDB ID	:	EMD-16630
Title	:	The organise full-length structure of the fungal non-reducing polyketide synthase (NR-PKS) PksA
Authors	:	Munoz-Hernandez, H.; Maier, T.
Deposited on	:	2023-02-03
Resolution	:	2.60 Å(reported)

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 2.60 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		5
Ramachandran outliers		0.1%
Sidechain outliers		7.3%

Worse   *Better*

▮ Percentile relative to all structures
▯ Percentile relative to all EM structures
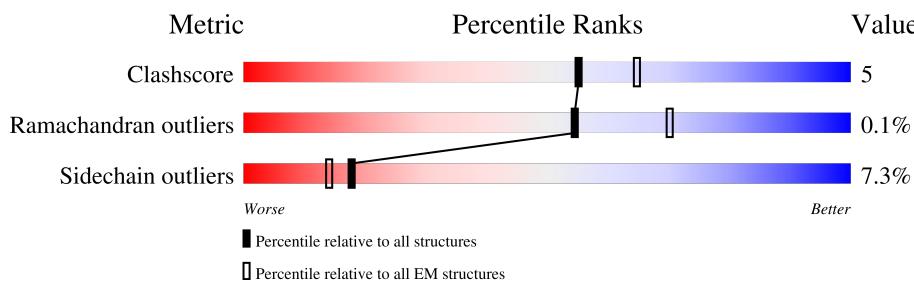
Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	158937	4297
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826

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	2170	48% 8% • 42%
1	B	2170	48% 8% • 42%
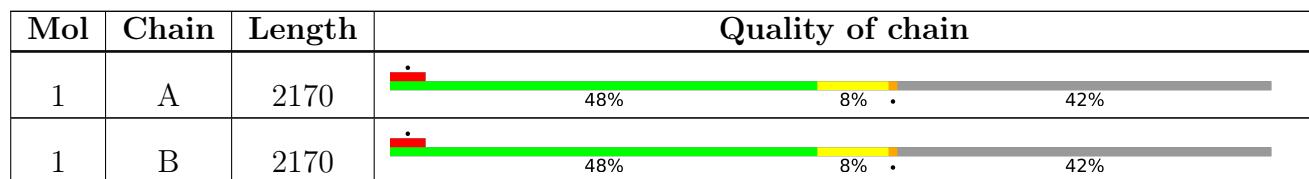
2 Entry composition ⓘ

There is only 1 type of molecule in this entry. The entry contains 38440 atoms, of which 19118 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 Norsolorinic acid synthase.

Mol	Chain	Residues	Atoms						AltConf	Trace
1	A	1252	Total	C	H	N	O	S	0	0
			19220	6083	9559	1693	1821	64		
1	B	1252	Total	C	H	N	O	S	0	0
			19220	6083	9559	1693	1821	64		

There are 122 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-60	MET	-	initiating methionine	UNP Q12053
A	-59	ALA	-	expression tag	UNP Q12053
A	-58	HIS	-	expression tag	UNP Q12053
A	-57	HIS	-	expression tag	UNP Q12053
A	-56	HIS	-	expression tag	UNP Q12053
A	-55	HIS	-	expression tag	UNP Q12053
A	-54	HIS	-	expression tag	UNP Q12053
A	-53	HIS	-	expression tag	UNP Q12053
A	-52	HIS	-	expression tag	UNP Q12053
A	-51	HIS	-	expression tag	UNP Q12053
A	-50	HIS	-	expression tag	UNP Q12053
A	-49	HIS	-	expression tag	UNP Q12053
A	-48	GLY	-	expression tag	UNP Q12053
A	-47	SER	-	expression tag	UNP Q12053
A	-46	THR	-	expression tag	UNP Q12053
A	-45	SER	-	expression tag	UNP Q12053
A	-44	GLY	-	expression tag	UNP Q12053
A	-43	SER	-	expression tag	UNP Q12053
A	-42	GLY	-	expression tag	UNP Q12053
A	-41	GLU	-	expression tag	UNP Q12053
A	-40	GLN	-	expression tag	UNP Q12053
A	-39	LYS	-	expression tag	UNP Q12053
A	-38	LEU	-	expression tag	UNP Q12053
A	-37	ILE	-	expression tag	UNP Q12053
A	-36	SER	-	expression tag	UNP Q12053
A	-35	GLU	-	expression tag	UNP Q12053

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Chain	Residue	Modelled	Actual	Comment	Reference
A	-34	GLU	-	expression tag	UNP Q12053
A	-33	ASP	-	expression tag	UNP Q12053
A	-32	LEU	-	expression tag	UNP Q12053
A	-31	GLY	-	expression tag	UNP Q12053
A	-30	SER	-	expression tag	UNP Q12053
A	-29	THR	-	expression tag	UNP Q12053
A	-28	SER	-	expression tag	UNP Q12053
A	-27	GLY	-	expression tag	UNP Q12053
A	-26	SER	-	expression tag	UNP Q12053
A	-25	GLY	-	expression tag	UNP Q12053
A	-24	ASP	-	expression tag	UNP Q12053
A	-23	TYR	-	expression tag	UNP Q12053
A	-22	LYS	-	expression tag	UNP Q12053
A	-21	ASP	-	expression tag	UNP Q12053
A	-20	ASP	-	expression tag	UNP Q12053
A	-19	ASP	-	expression tag	UNP Q12053
A	-18	ASP	-	expression tag	UNP Q12053
A	-17	LYS	-	expression tag	UNP Q12053
A	-16	LEU	-	expression tag	UNP Q12053
A	-15	THR	-	expression tag	UNP Q12053
A	-14	SER	-	expression tag	UNP Q12053
A	-13	LEU	-	expression tag	UNP Q12053
A	-12	TYR	-	expression tag	UNP Q12053
A	-11	LYS	-	expression tag	UNP Q12053
A	-10	LYS	-	expression tag	UNP Q12053
A	-9	ALA	-	expression tag	UNP Q12053
A	-8	GLY	-	expression tag	UNP Q12053
A	-7	LEU	-	expression tag	UNP Q12053
A	-6	GLU	-	expression tag	UNP Q12053
A	-5	ASN	-	expression tag	UNP Q12053
A	-4	LEU	-	expression tag	UNP Q12053
A	-3	TYR	-	expression tag	UNP Q12053
A	-2	PHE	-	expression tag	UNP Q12053
A	-1	GLN	-	expression tag	UNP Q12053
A	0	GLY	-	expression tag	UNP Q12053
B	-60	MET	-	initiating methionine	UNP Q12053
B	-59	ALA	-	expression tag	UNP Q12053
B	-58	HIS	-	expression tag	UNP Q12053
B	-57	HIS	-	expression tag	UNP Q12053
B	-56	HIS	-	expression tag	UNP Q12053
B	-55	HIS	-	expression tag	UNP Q12053
B	-54	HIS	-	expression tag	UNP Q12053

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Chain	Residue	Modelled	Actual	Comment	Reference
B	-53	HIS	-	expression tag	UNP Q12053
B	-52	HIS	-	expression tag	UNP Q12053
B	-51	HIS	-	expression tag	UNP Q12053
B	-50	HIS	-	expression tag	UNP Q12053
B	-49	HIS	-	expression tag	UNP Q12053
B	-48	GLY	-	expression tag	UNP Q12053
B	-47	SER	-	expression tag	UNP Q12053
B	-46	THR	-	expression tag	UNP Q12053
B	-45	SER	-	expression tag	UNP Q12053
B	-44	GLY	-	expression tag	UNP Q12053
B	-43	SER	-	expression tag	UNP Q12053
B	-42	GLY	-	expression tag	UNP Q12053
B	-41	GLU	-	expression tag	UNP Q12053
B	-40	GLN	-	expression tag	UNP Q12053
B	-39	LYS	-	expression tag	UNP Q12053
B	-38	LEU	-	expression tag	UNP Q12053
B	-37	ILE	-	expression tag	UNP Q12053
B	-36	SER	-	expression tag	UNP Q12053
B	-35	GLU	-	expression tag	UNP Q12053
B	-34	GLU	-	expression tag	UNP Q12053
B	-33	ASP	-	expression tag	UNP Q12053
B	-32	LEU	-	expression tag	UNP Q12053
B	-31	GLY	-	expression tag	UNP Q12053
B	-30	SER	-	expression tag	UNP Q12053
B	-29	THR	-	expression tag	UNP Q12053
B	-28	SER	-	expression tag	UNP Q12053
B	-27	GLY	-	expression tag	UNP Q12053
B	-26	SER	-	expression tag	UNP Q12053
B	-25	GLY	-	expression tag	UNP Q12053
B	-24	ASP	-	expression tag	UNP Q12053
B	-23	TYR	-	expression tag	UNP Q12053
B	-22	LYS	-	expression tag	UNP Q12053
B	-21	ASP	-	expression tag	UNP Q12053
B	-20	ASP	-	expression tag	UNP Q12053
B	-19	ASP	-	expression tag	UNP Q12053
B	-18	ASP	-	expression tag	UNP Q12053
B	-17	LYS	-	expression tag	UNP Q12053
B	-16	LEU	-	expression tag	UNP Q12053
B	-15	THR	-	expression tag	UNP Q12053
B	-14	SER	-	expression tag	UNP Q12053
B	-13	LEU	-	expression tag	UNP Q12053
B	-12	TYR	-	expression tag	UNP Q12053

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Chain	Residue	Modelled	Actual	Comment	Reference
B	-11	LYS	-	expression tag	UNP Q12053
B	-10	LYS	-	expression tag	UNP Q12053
B	-9	ALA	-	expression tag	UNP Q12053
B	-8	GLY	-	expression tag	UNP Q12053
B	-7	LEU	-	expression tag	UNP Q12053
B	-6	GLU	-	expression tag	UNP Q12053
B	-5	ASN	-	expression tag	UNP Q12053
B	-4	LEU	-	expression tag	UNP Q12053
B	-3	TYR	-	expression tag	UNP Q12053
B	-2	PHE	-	expression tag	UNP Q12053
B	-1	GLN	-	expression tag	UNP Q12053
B	0	GLY	-	expression tag	UNP Q12053

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: Norsolorinic acid synthase

• Molecule 1: Norsolorinic acid synthase

Chain B: 48% 8% 42%

N504 T505 A506 Q507 N508 I509 D510 T511 Y512 F513 I514 T515 G516 G517 N518 R519 G520 F521 I522 P523 G524 R525 D540 T541 A542 C543 S546 T570 I573 Y574 T575 P576 D577 T580 G581 L582 D583 K584 G585 F586 F587 L588 S589 R590 T591 C594 K595 P596 Y597 D598 D599 K600 A601 D602

V610 D626 S645 R648 M658 S673 T680 A687 E691 S692 V693 V696 P699 S700 E701 T702 A703 R704 D707 G724 V725 S726 G727 V728 M736 P751 G752 S753 R757 R765 T779 H780 T781 S791 D803 E806 R807 H808 W809

S818 K832 N845 T848 D849 L850 R860 S869 V878 T879 R880 M884 A885 I886 Q887 S897 K898 T906 G907 S910 T914 R927 E928 D929 E957 E958 V962 V963 L975 T976 N977 L978 M979 R985 T989 S993 F997 Y1001

S1009 D1010 V1011 L1022 Q1023 E1024 R1025 C1026 Q1027 E1061 L1088 Q1099 V1100 Q1101 P1102 D1105 D1106 F1107 R1129 Q1135 V1143 C1147 D1152 Q1155 R1158 S1159 E1162 K1169 E1174 I1181 V1185 L1189 G1190 D1191 S1194 L1241 P1242 S1243 K1249

P1254

GLN LYS GLU HIS VAL SER ILE ILE SER ASP LEU ILE ASP ARG VAL MET ALA

4　Experimental information ⓘ

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C2	Depositor
Number of particles used	361377	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 $(e^-/\text{Å}^2)$	60	Depositor
Minimum defocus (nm)	900	Depositor
Maximum defocus (nm)	3200	Depositor
Magnification	165000	Depositor
Image detector	GATAN K2 QUANTUM (4k x 4k)	Depositor
Maximum map value	0.529	Depositor
Minimum map value	-0.251	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.014	Depositor
Recommended contour level	0.075	Depositor
Map size (Å)	314.88, 314.88, 314.88	wwPDB
Map dimensions	384, 384, 384	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.82, 0.82, 0.82	Depositor

5   Model quality ⓘ

5.1   Standard geometry ⓘ

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#$|Z|$ >5	RMSZ	#$|Z|$ >5
1	A	0.29	0/9884	0.50	0/13444
1	B	0.29	0/9884	0.50	0/13444
All	All	0.29	0/19768	0.50	0/26888

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand. A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	2
1	B	0	1
All	All	0	3

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (3) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	338	GLU	Peptide
1	A	541	THR	Peptide
1	B	541	THR	Peptide

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.

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	9661	9559	9569	102	0
1	B	9661	9559	9569	105	0
All	All	19322	19118	19138	203	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 5.

All (203) 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)
1:B:546:SER:OG	1:B:724:GLY:O	1.83	0.94
1:A:546:SER:OG	1:A:724:GLY:O	1.90	0.89
1:B:104:MET:SD	1:B:107:GLN:NE2	2.51	0.83
1:A:1129:ARG:NH2	1:A:1152:ASP:OD2	2.11	0.83
1:A:104:MET:SD	1:A:107:GLN:NE2	2.51	0.83
1:A:335:ARG:NH1	1:A:337:ASN:OD1	2.13	0.80
1:A:3:GLN:N	1:A:326:SER:HG	1.79	0.80
1:B:1129:ARG:NH2	1:B:1152:ASP:OD2	2.16	0.78
1:B:348:PHE:O	1:B:351:THR:N	2.19	0.73
1:A:112:TYR:OH	1:A:322:ARG:NH2	2.23	0.71
1:B:914:THR:HG22	1:B:914:THR:O	1.89	0.71
1:A:914:THR:HG22	1:A:914:THR:O	1.90	0.70
1:A:481:THR:HG1	1:A:484:THR:HG1	1.20	0.70
1:B:164:SER:OG	1:B:167:ARG:O	2.08	0.70
1:B:345:PRO:O	1:B:349:ILE:HG23	1.96	0.66
1:B:333:LEU:HD11	1:B:356:ASP:HB2	1.77	0.66
1:B:350:SER:O	1:B:351:THR:HG23	1.96	0.66
1:A:164:SER:OG	1:A:167:ARG:O	2.13	0.65
1:A:496:THR:O	1:A:519:ARG:NH2	2.30	0.65
1:B:336:MET:N	1:B:336:MET:SD	2.71	0.64
1:A:1025:ARG:NH1	1:A:1106:ASP:OD2	2.31	0.64
1:B:541:THR:HG22	1:B:541:THR:O	1.95	0.64
1:A:541:THR:HG22	1:A:541:THR:O	1.98	0.63
1:B:1025:ARG:NH1	1:B:1106:ASP:OD2	2.32	0.63
1:B:356:ASP:O	1:B:357:THR:OG1	2.16	0.62
1:B:845:ASN:O	1:B:848:THR:HG23	1.99	0.62
1:B:1023:GLN:O	1:B:1023:GLN:NE2	2.31	0.62
1:B:589:SER:OG	1:B:602:ASP:OD1	2.18	0.62
1:A:518:ASN:OD1	1:A:519:ARG:N	2.32	0.62
1:A:701:GLU:O	1:A:702:THR:OG1	2.17	0.61
1:B:518:ASN:OD1	1:B:519:ARG:N	2.33	0.61
1:A:1023:GLN:O	1:A:1023:GLN:NE2	2.32	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:463:ALA:O	1:A:467:THR:OG1	2.16	0.61
1:A:406:VAL:HG12	1:A:413:ILE:HD11	1.83	0.60
1:B:496:THR:O	1:B:519:ARG:NH2	2.34	0.60
1:B:1027:GLN:O	1:B:1099:GLN:NE2	2.34	0.60
1:B:190:PHE:O	1:B:194:THR:OG1	2.19	0.60
1:A:1027:GLN:O	1:A:1099:GLN:NE2	2.34	0.59
1:B:498:ASN:OD1	1:B:519:ARG:NE	2.35	0.59
1:A:1009:SER:OG	1:B:159:ARG:O	2.21	0.58
1:B:1185:VAL:HG13	1:B:1189:LEU:HD12	1.86	0.58
1:B:43:VAL:HG22	1:B:144:LEU:HD13	1.86	0.58
1:B:463:ALA:O	1:B:467:THR:OG1	2.14	0.57
1:B:598:ASP:OD1	1:B:599:ASP:N	2.38	0.57
1:B:499:ASP:OD2	1:B:575:THR:N	2.36	0.57
1:A:498:ASN:OD1	1:A:519:ARG:NE	2.38	0.56
1:B:626:ASP:O	1:B:807:ARG:NH1	2.33	0.56
1:A:328:THR:HG22	1:A:329:ILE:H	1.71	0.56
1:A:117:CYS:SG	1:A:306:VAL:HG11	2.45	0.56
1:A:388:THR:HG1	1:A:391:SER:HG	1.54	0.55
1:A:352:GLU:OE1	1:A:353:THR:N	2.40	0.55
1:A:356:ASP:O	1:A:357:THR:OG1	2.20	0.55
1:A:598:ASP:OD1	1:A:599:ASP:N	2.39	0.55
1:A:850:LEU:HD11	1:A:878:VAL:HG21	1.89	0.55
1:A:626:ASP:O	1:A:807:ARG:NH1	2.32	0.55
1:B:573:ILE:O	1:B:573:ILE:HG22	2.06	0.55
1:A:120:SER:O	1:A:124:VAL:HG23	2.07	0.54
1:A:352:GLU:OE1	1:A:353:THR:OG1	2.19	0.54
1:A:1001:TYR:HB2	1:A:1011:VAL:HG21	1.88	0.54
1:A:357:THR:HG22	1:A:358:GLY:H	1.71	0.54
1:B:388:THR:HG1	1:B:391:SER:HG	1.54	0.54
1:B:626:ASP:OD1	1:B:860:ARG:NH2	2.41	0.54
1:B:341:SER:O	1:B:345:PRO:HD2	2.08	0.54
1:B:1022:LEU:HD11	1:B:1100:VAL:HG12	1.91	0.53
1:B:117:CYS:SG	1:B:306:VAL:HG11	2.48	0.53
1:A:845:ASN:O	1:A:848:THR:HG23	2.08	0.53
1:A:573:ILE:HG22	1:A:573:ILE:O	2.10	0.52
1:B:701:GLU:O	1:B:702:THR:OG1	2.22	0.52
1:A:72:TYR:OH	1:A:82:ARG:NH2	2.43	0.52
1:A:626:ASP:OD1	1:A:860:ARG:NH2	2.43	0.52
1:B:352:GLU:O	1:B:353:THR:OG1	2.24	0.52
1:B:319:LEU:HD22	1:B:332:PHE:CZ	2.45	0.51
1:B:481:THR:OG1	1:B:484:THR:OG1	2.03	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:914:THR:O	1:A:914:THR:CG2	2.59	0.51
1:B:341:SER:O	1:B:344:LEU:N	2.41	0.51
1:B:336:MET:HG2	1:B:341:SER:HB3	1.93	0.51
1:B:345:PRO:HB3	1:B:353:THR:HG21	1.92	0.51
1:A:1022:LEU:HD11	1:A:1100:VAL:HG12	1.92	0.50
1:B:366:ARG:HG3	1:B:367:PRO:N	2.26	0.50
1:A:118:MET:O	1:A:118:MET:HG2	2.12	0.50
1:A:366:ARG:HG3	1:A:367:PRO:N	2.26	0.50
1:B:914:THR:O	1:B:914:THR:CG2	2.58	0.50
1:A:692:SER:O	1:A:696:VAL:HG23	2.12	0.50
1:B:351:THR:C	1:B:352:GLU:HG2	2.31	0.50
1:A:499:ASP:OD2	1:A:575:THR:N	2.37	0.49
1:B:692:SER:O	1:B:696:VAL:HG23	2.12	0.49
1:B:658:MET:HE1	1:B:693:VAL:HG22	1.95	0.49
1:B:575:THR:HG22	1:B:577:ASP:H	1.77	0.49
1:B:699:PRO:O	1:B:765:ARG:NH2	2.44	0.49
1:B:1158:ARG:O	1:B:1162:GLU:HG3	2.12	0.49
1:B:1181:ILE:O	1:B:1185:VAL:HG23	2.12	0.49
1:B:330:VAL:HG12	1:B:331:PRO:HD2	1.93	0.49
1:B:70:GLN:O	1:B:73:VAL:HG22	2.13	0.49
1:B:118:MET:O	1:B:118:MET:HG2	2.12	0.49
1:A:32:ILE:HD11	1:B:32:ILE:HD11	1.95	0.48
1:A:330:VAL:HG12	1:A:331:PRO:HD2	1.94	0.48
1:B:906:THR:OG1	1:B:1174:GLU:OE2	2.29	0.48
1:B:117:CYS:O	1:B:118:MET:HB3	2.13	0.48
1:A:117:CYS:O	1:A:118:MET:HB3	2.13	0.48
1:B:806:GLU:N	1:B:806:GLU:OE2	2.47	0.48
1:B:1001:TYR:HB2	1:B:1011:VAL:HG21	1.95	0.48
1:A:4:SER:OG	1:A:5:ARG:N	2.46	0.47
1:A:521:PHE:O	1:A:525:ARG:HB2	2.15	0.47
1:B:335:ARG:NH1	1:B:337:ASN:OD1	2.47	0.47
1:A:1075:VAL:O	1:A:1079:MET:HG3	2.15	0.47
1:A:269:GLN:O	1:A:270:LEU:HD13	2.16	0.46
1:B:519:ARG:NH1	1:B:540:ASP:OD2	2.48	0.46
1:B:809:TRP:HA	1:B:809:TRP:CE3	2.50	0.46
1:A:658:MET:HE1	1:A:693:VAL:HG22	1.98	0.46
1:A:354:ARG:HG3	1:A:355:THR:H	1.80	0.46
1:B:13:GLN:O	1:B:82:ARG:NH1	2.42	0.46
1:B:522:ILE:HB	1:B:523:PRO:CD	2.46	0.46
1:A:315:LEU:O	1:A:319:LEU:HD23	2.16	0.45
1:A:809:TRP:HA	1:A:809:TRP:CE3	2.50	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:330:VAL:HG12	1:A:331:PRO:CD	2.47	0.45
1:A:806:GLU:N	1:A:806:GLU:OE2	2.49	0.45
1:B:392:PHE:CD2	1:B:736:MET:HE1	2.52	0.45
1:A:209:LYS:O	1:A:210:ASN:CB	2.64	0.45
1:A:514:ILE:HD12	1:B:581:GLY:HA3	1.99	0.45
1:B:259:LEU:O	1:B:291:ARG:NH1	2.50	0.45
1:A:865:LEU:HD21	1:A:894:ARG:NH1	2.31	0.45
1:A:1158:ARG:O	1:A:1162:GLU:HG3	2.16	0.45
1:A:522:ILE:HB	1:A:523:PRO:CD	2.47	0.45
1:A:1169:LYS:O	1:A:1169:LYS:HG3	2.17	0.44
1:A:15:ALA:HB1	1:A:338:GLU:HG2	2.00	0.44
1:B:319:LEU:HD22	1:B:332:PHE:HZ	1.82	0.44
1:A:906:THR:OG1	1:A:1174:GLU:OE1	2.33	0.44
1:B:543:CYS:HB2	1:B:791:SER:HA	1.99	0.44
1:B:1181:ILE:O	1:B:1181:ILE:HG22	2.18	0.44
1:A:364:SER:OG	1:A:365:GLY:N	2.48	0.44
1:B:1106:ASP:OD1	1:B:1106:ASP:N	2.51	0.44
1:A:43:VAL:HG22	1:A:144:LEU:HD13	1.99	0.44
1:A:543:CYS:HB2	1:A:791:SER:HA	1.99	0.44
1:B:174:ILE:HG12	1:B:238:ILE:HD11	1.98	0.44
1:A:357:THR:HG22	1:A:358:GLY:N	2.31	0.44
1:B:343:ILE:HD12	1:B:343:ILE:N	2.33	0.44
1:B:779:THR:OG1	1:B:780:HIS:N	2.51	0.44
1:B:344:LEU:HD22	1:B:348:PHE:HE2	1.83	0.44
1:B:850:LEU:HD11	1:B:878:VAL:HG21	2.00	0.44
1:A:519:ARG:NH1	1:A:540:ASP:OD2	2.49	0.44
1:B:341:SER:O	1:B:345:PRO:CD	2.66	0.44
1:B:522:ILE:HB	1:B:523:PRO:HD3	2.00	0.43
1:A:522:ILE:HB	1:A:523:PRO:HD3	2.01	0.43
1:A:1106:ASP:OD1	1:A:1106:ASP:N	2.51	0.43
1:A:1181:ILE:HG22	1:A:1181:ILE:O	2.18	0.43
1:B:1169:LYS:HG3	1:B:1169:LYS:O	2.17	0.43
1:B:269:GLN:O	1:B:270:LEU:HD13	2.19	0.43
1:B:351:THR:O	1:B:352:GLU:HG2	2.18	0.43
1:A:895:PRO:O	1:A:896:LYS:CB	2.67	0.43
1:B:155:GLU:OE2	1:B:155:GLU:HA	2.18	0.43
1:B:319:LEU:HD13	1:B:332:PHE:CE2	2.53	0.43
1:B:1101:GLN:N	1:B:1102:PRO:HD2	2.34	0.43
1:A:320:GLN:O	1:A:324:VAL:HG23	2.19	0.42
1:A:334:THR:O	1:A:336:MET:HE3	2.20	0.42
1:A:406:VAL:HG12	1:A:413:ILE:CD1	2.48	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1107:PHE:CE2	1:A:1143:VAL:HG12	2.54	0.42
1:B:521:PHE:O	1:B:525:ARG:HB2	2.18	0.42
1:A:354:ARG:HA	1:A:354:ARG:NE	2.35	0.42
1:A:895:PRO:O	1:A:896:LYS:CG	2.67	0.42
1:B:222:ARG:HG3	1:B:223:ALA:N	2.35	0.42
1:A:975:LEU:O	1:A:979:MET:HG2	2.20	0.42
1:A:1054:VAL:O	1:A:1150:THR:HG22	2.20	0.42
1:A:1169:LYS:HB3	1:A:1169:LYS:NZ	2.35	0.42
1:A:779:THR:OG1	1:A:780:HIS:N	2.52	0.42
1:A:345:PRO:O	1:A:349:ILE:HG12	2.20	0.41
1:A:880:ARG:O	1:A:884:MET:HG2	2.20	0.41
1:A:906:THR:HG22	1:A:907:GLY:N	2.35	0.41
1:B:329:ILE:HD12	1:B:351:THR:HG21	2.02	0.41
1:B:1107:PHE:CE2	1:B:1143:VAL:HG12	2.54	0.41
1:A:222:ARG:HG3	1:A:223:ALA:N	2.35	0.41
1:A:1101:GLN:N	1:A:1102:PRO:HD2	2.34	0.41
1:B:570:THR:HG22	1:B:610:VAL:HG22	2.02	0.41
1:B:880:ARG:O	1:B:884:MET:HG2	2.20	0.41
1:A:319:LEU:HD23	1:A:319:LEU:H	1.84	0.41
1:A:1088:LEU:C	1:A:1088:LEU:HD13	2.41	0.41
1:B:328:THR:HG22	1:B:329:ILE:N	2.35	0.41
1:B:1191:ASP:OD2	1:B:1191:ASP:N	2.53	0.41
1:B:962:VAL:HG13	1:B:963:VAL:N	2.36	0.41
1:B:997:PHE:HB3	1:B:1011:VAL:HG13	2.03	0.41
1:B:414:ASN:HA	1:B:417:VAL:HG23	2.02	0.41
1:A:190:PHE:O	1:A:194:THR:OG1	2.37	0.41
1:A:1168:ASP:N	1:A:1168:ASP:OD1	2.53	0.41
1:A:319:LEU:HD13	1:A:332:PHE:CZ	2.56	0.41
1:A:348:PHE:HA	1:A:352:GLU:HB3	2.02	0.41
1:B:353:THR:CG2	1:B:354:ARG:N	2.83	0.41
1:A:155:GLU:OE2	1:A:155:GLU:HA	2.21	0.41
1:A:482:PRO:HD3	1:B:49:LEU:HD22	2.03	0.41
1:A:1191:ASP:N	1:A:1191:ASP:OD2	2.53	0.41
1:B:906:THR:HG22	1:B:907:GLY:N	2.35	0.41
1:B:975:LEU:O	1:B:979:MET:HG2	2.21	0.41
1:A:699:PRO:O	1:A:765:ARG:NH2	2.45	0.41
1:B:929:ASP:OD2	1:B:977:ASN:ND2	2.51	0.41
1:B:1088:LEU:C	1:B:1088:LEU:HD13	2.41	0.41
1:A:703:ALA:O	1:A:705:LYS:N	2.53	0.40
1:A:902:LEU:HD23	1:A:1172:VAL:HG22	2.04	0.40
1:B:1169:LYS:HB3	1:B:1169:LYS:NZ	2.35	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:366:ARG:HH11	1:A:373:LYS:H	1.69	0.40
1:B:832:LYS:HE2	1:B:886:ILE:HG23	2.03	0.40
1:B:348:PHE:O	1:B:351:THR:O	2.39	0.40
1:A:15:ALA:CB	1:A:338:GLU:HG2	2.52	0.40
1:A:675:ILE:HB	1:A:712:VAL:HG12	2.04	0.40
1:B:687:ALA:O	1:B:691:GLU:HG2	2.22	0.40
1:B:897:SER:O	1:B:898:LYS:C	2.60	0.40

There are no symmetry-related clashes.

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM entries.

The Analysed column shows the number of residues for which the backbone conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	1250/2170 (58%)	1155 (92%)	94 (8%)	1 (0%)	51	75
1	B	1250/2170 (58%)	1163 (93%)	86 (7%)	1 (0%)	51	75
All	All	2500/4340 (58%)	2318 (93%)	180 (7%)	2 (0%)	54	75

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	210	ASN
1	B	352	GLU

5.3.2 Protein sidechains (i)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM entries.

The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	1060/1823 (58%)	982 (93%)	78 (7%)	13	28
1	B	1060/1823 (58%)	983 (93%)	77 (7%)	14	28
All	All	2120/3646 (58%)	1965 (93%)	155 (7%)	18	28

All (155) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	23	SER
1	A	127	SER
1	A	163	CYS
1	A	167	ARG
1	A	199	THR
1	A	208	SER
1	A	217	SER
1	A	222	ARG
1	A	227	MET
1	A	260	ASP
1	A	262	THR
1	A	265	THR
1	A	269	GLN
1	A	278	SER
1	A	286	GLN
1	A	287	THR
1	A	288	SER
1	A	306	VAL
1	A	319	LEU
1	A	325	LYS
1	A	330	VAL
1	A	332	PHE
1	A	335	ARG
1	A	336	MET
1	A	340	MET
1	A	348	PHE
1	A	351	THR
1	A	354	ARG
1	A	364	SER
1	A	366	ARG
1	A	386	SER
1	A	391	SER
1	A	395	LEU
1	A	404	LYS
1	A	409	ARG

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Mol	Chain	Res	Type
1	A	411	TRP
1	A	433	CYS
1	A	438	SER
1	A	483	SER
1	A	499	ASP
1	A	500	TRP
1	A	518	ASN
1	A	597	TYR
1	A	645	SER
1	A	648	ARG
1	A	673	SER
1	A	707	ASP
1	A	708	GLN
1	A	725	VAL
1	A	726	SER
1	A	728	VAL
1	A	747	CYS
1	A	779	THR
1	A	781	THR
1	A	803	ASP
1	A	807	ARG
1	A	808	HIS
1	A	818	SER
1	A	832	LYS
1	A	887	GLN
1	A	894	ARG
1	A	896	LYS
1	A	927	ARG
1	A	929	ASP
1	A	985	ARG
1	A	1009	SER
1	A	1061	GLU
1	A	1086	CYS
1	A	1105	ASP
1	A	1106	ASP
1	A	1135	GLN
1	A	1147	CYS
1	A	1155	GLN
1	A	1159	SER
1	A	1169	LYS
1	A	1194	SER
1	A	1243	SER

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Mol	Chain	Res	Type
1	A	1249	LYS
1	B	23	SER
1	B	127	SER
1	B	163	CYS
1	B	167	ARG
1	B	199	THR
1	B	208	SER
1	B	217	SER
1	B	222	ARG
1	B	227	MET
1	B	260	ASP
1	B	262	THR
1	B	265	THR
1	B	269	GLN
1	B	278	SER
1	B	286	GLN
1	B	287	THR
1	B	288	SER
1	B	306	VAL
1	B	330	VAL
1	B	332	PHE
1	B	335	ARG
1	B	336	MET
1	B	341	SER
1	B	351	THR
1	B	359	ARG
1	B	366	ARG
1	B	386	SER
1	B	391	SER
1	B	395	LEU
1	B	398	LYS
1	B	409	ARG
1	B	411	TRP
1	B	433	CYS
1	B	438	SER
1	B	483	SER
1	B	497	SER
1	B	499	ASP
1	B	505	THR
1	B	518	ASN
1	B	522	ILE
1	B	594	CYS

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Mol	Chain	Res	Type
1	B	597	TYR
1	B	645	SER
1	B	648	ARG
1	B	673	SER
1	B	707	ASP
1	B	725	VAL
1	B	726	SER
1	B	728	VAL
1	B	779	THR
1	B	781	THR
1	B	803	ASP
1	B	807	ARG
1	B	808	HIS
1	B	818	SER
1	B	832	LYS
1	B	869	SER
1	B	887	GLN
1	B	910	SER
1	B	927	ARG
1	B	985	ARG
1	B	989	THR
1	B	993	SER
1	B	1009	SER
1	B	1061	GLU
1	B	1105	ASP
1	B	1106	ASP
1	B	1135	GLN
1	B	1147	CYS
1	B	1155	GLN
1	B	1159	SER
1	B	1169	LYS
1	B	1191	ASP
1	B	1194	SER
1	B	1241	LEU
1	B	1243	SER
1	B	1249	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (1) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	940	HIS

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 monosaccharides 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-16630. 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 ⓘ
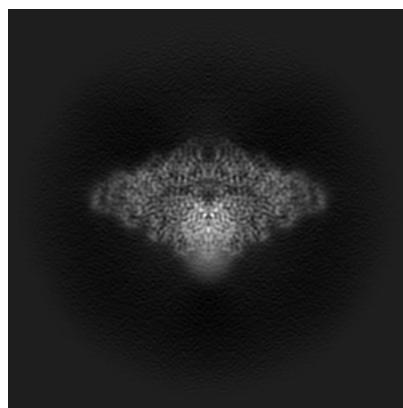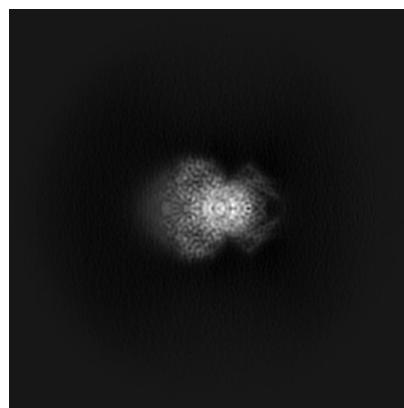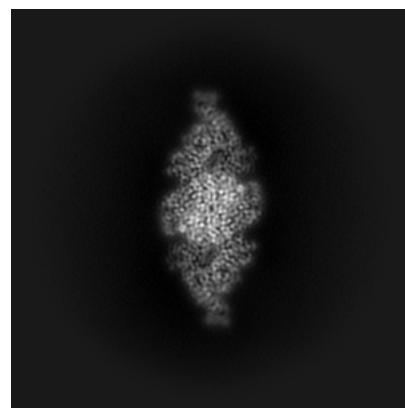
6.1.1 Primary map

| X | Y | Z |

6.1.2 Raw map

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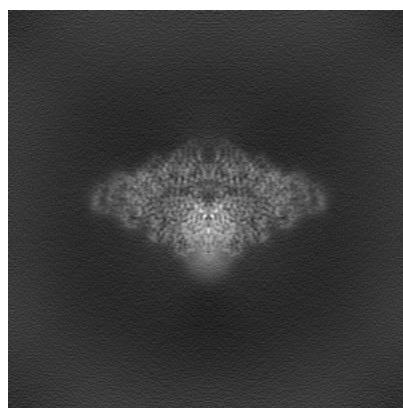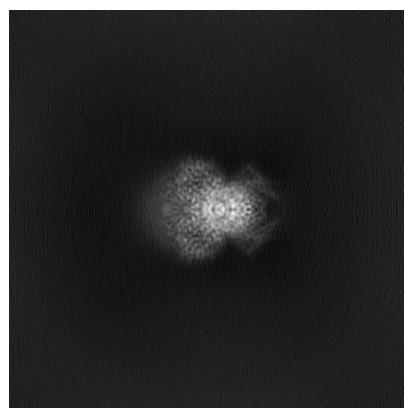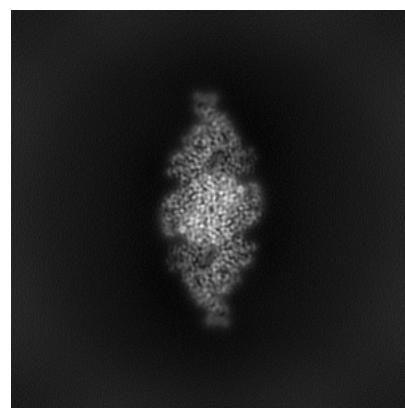
The images above show the map projected in three orthogonal directions.

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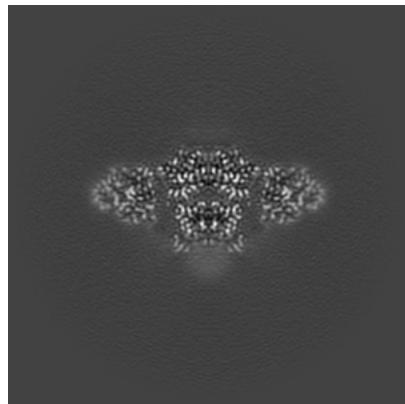
6.2.1 Primary map
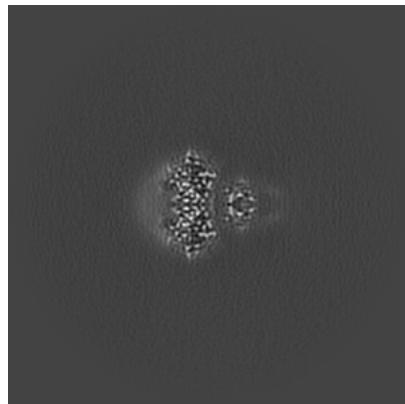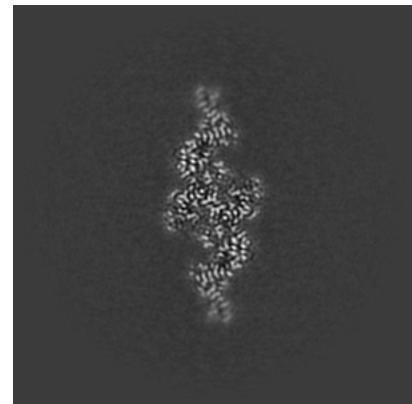
| X Index: 192 | Y Index: 192 | Z Index: 192 |

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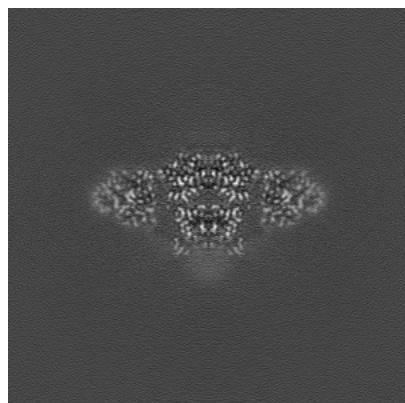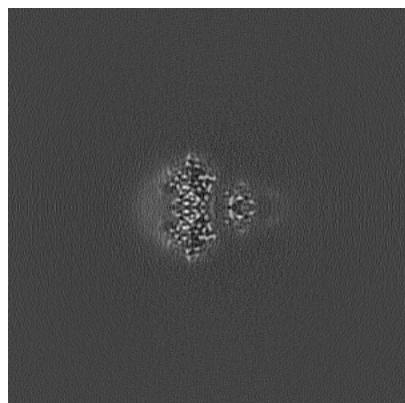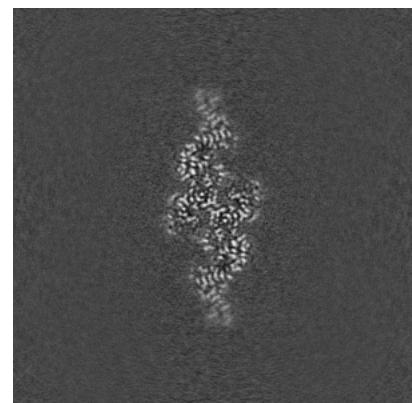
| X Index: 192 | Y Index: 192 | Z Index: 192 |

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

6.3 Largest variance slices ⓘ

6.3.1 Primary map
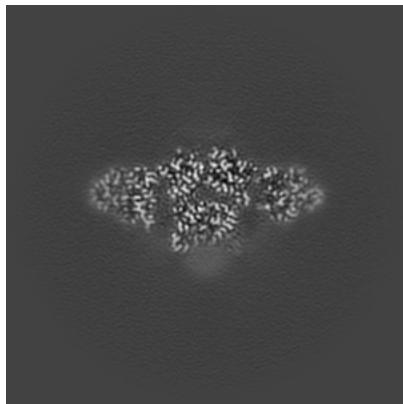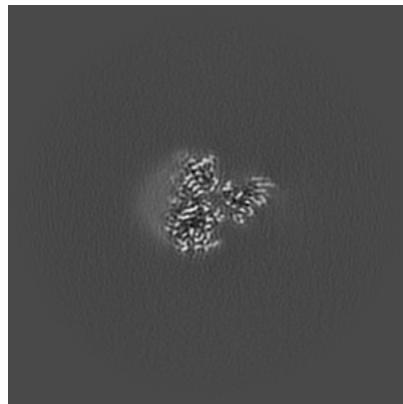
| X Index: 194 | Y Index: 200 | Z Index: 187 |
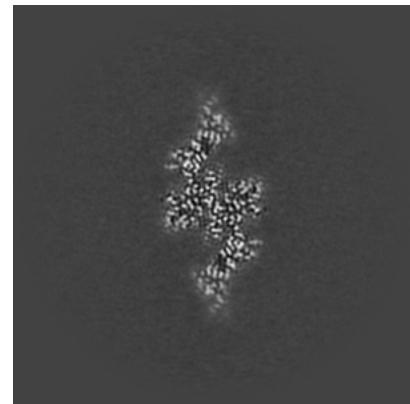
6.3.2 Raw map
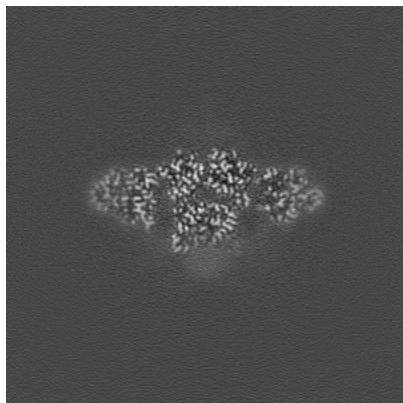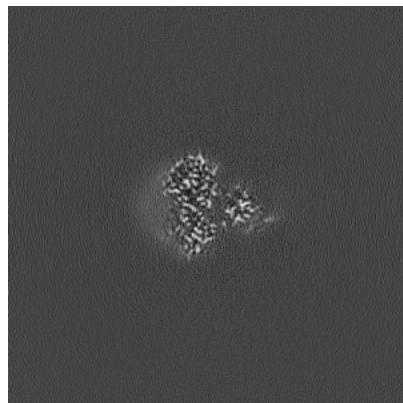
| X Index: 194 | Y Index: 187 | Z Index: 186 |
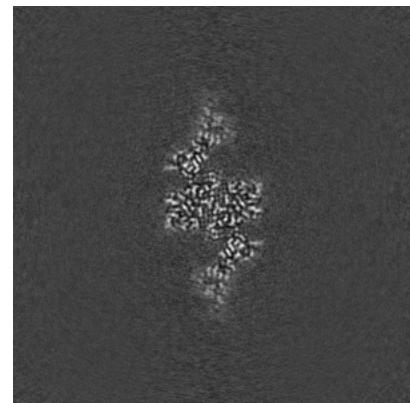
The images above show the largest variance slices of the map in three orthogonal directions.

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

6.4.1 Primary map

| X | Y | Z |

6.4.2 Raw map

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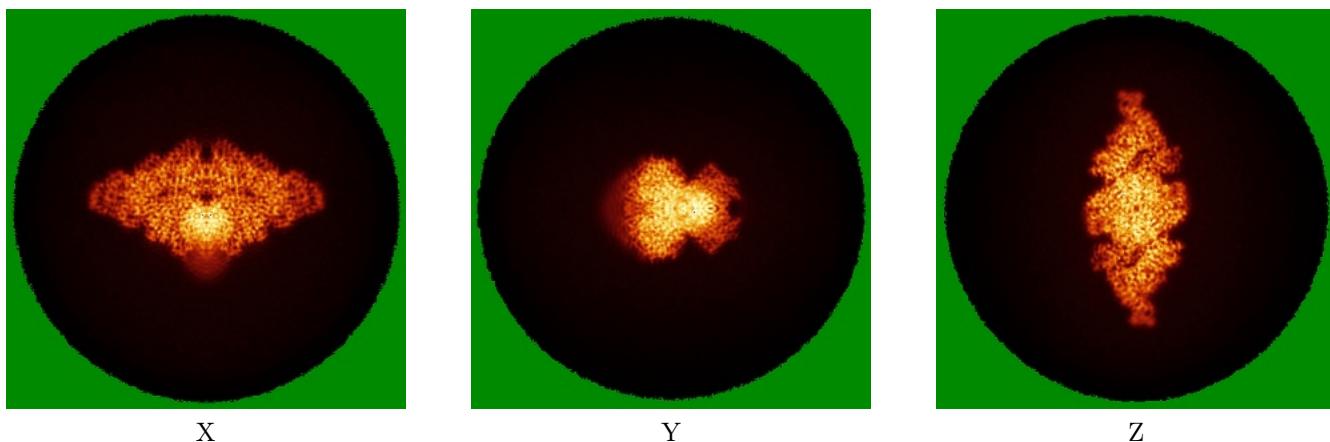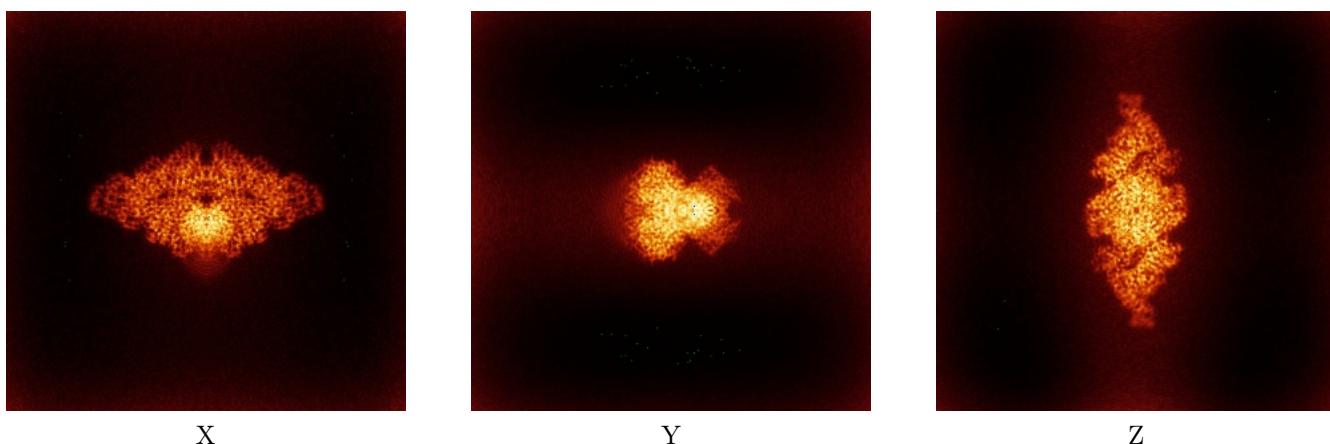
The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

6.5 Orthogonal surface views ⓘ

6.5.1 Primary map

| X | Y | Z |
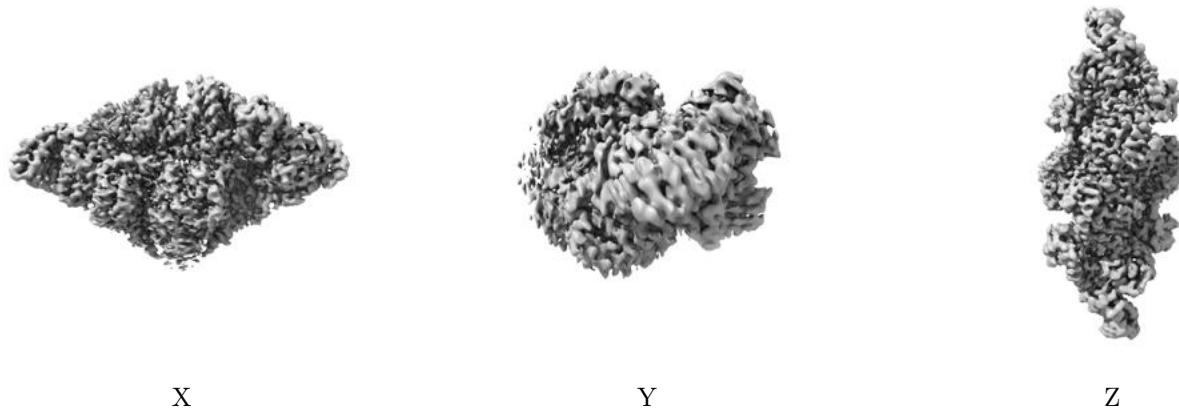
The images above show the 3D surface view of the map at the recommended contour level 0.075. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map

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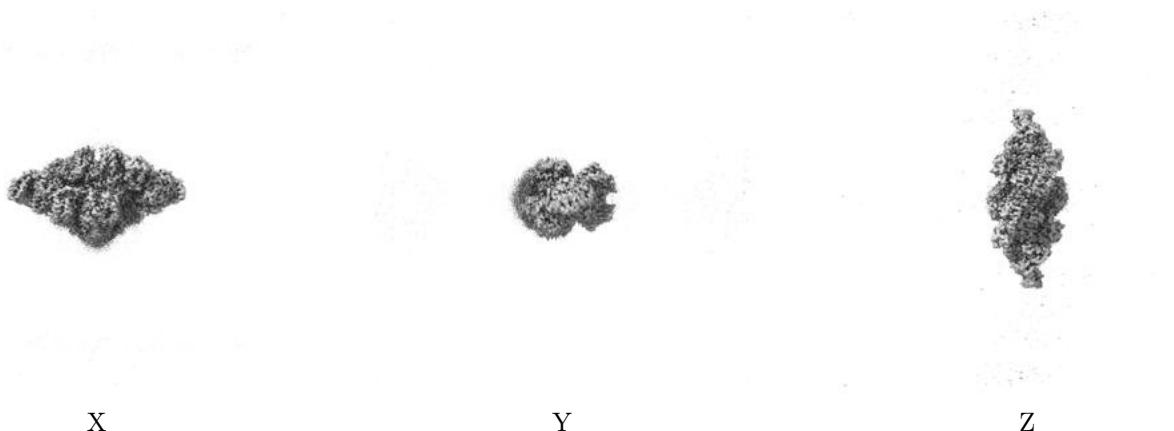
These images show the 3D surface of the raw map. The raw map's contour level was selected so that its surface encloses the same volume as the primary map does at its recommended contour level.

6.6 Mask visualisation ⓘ

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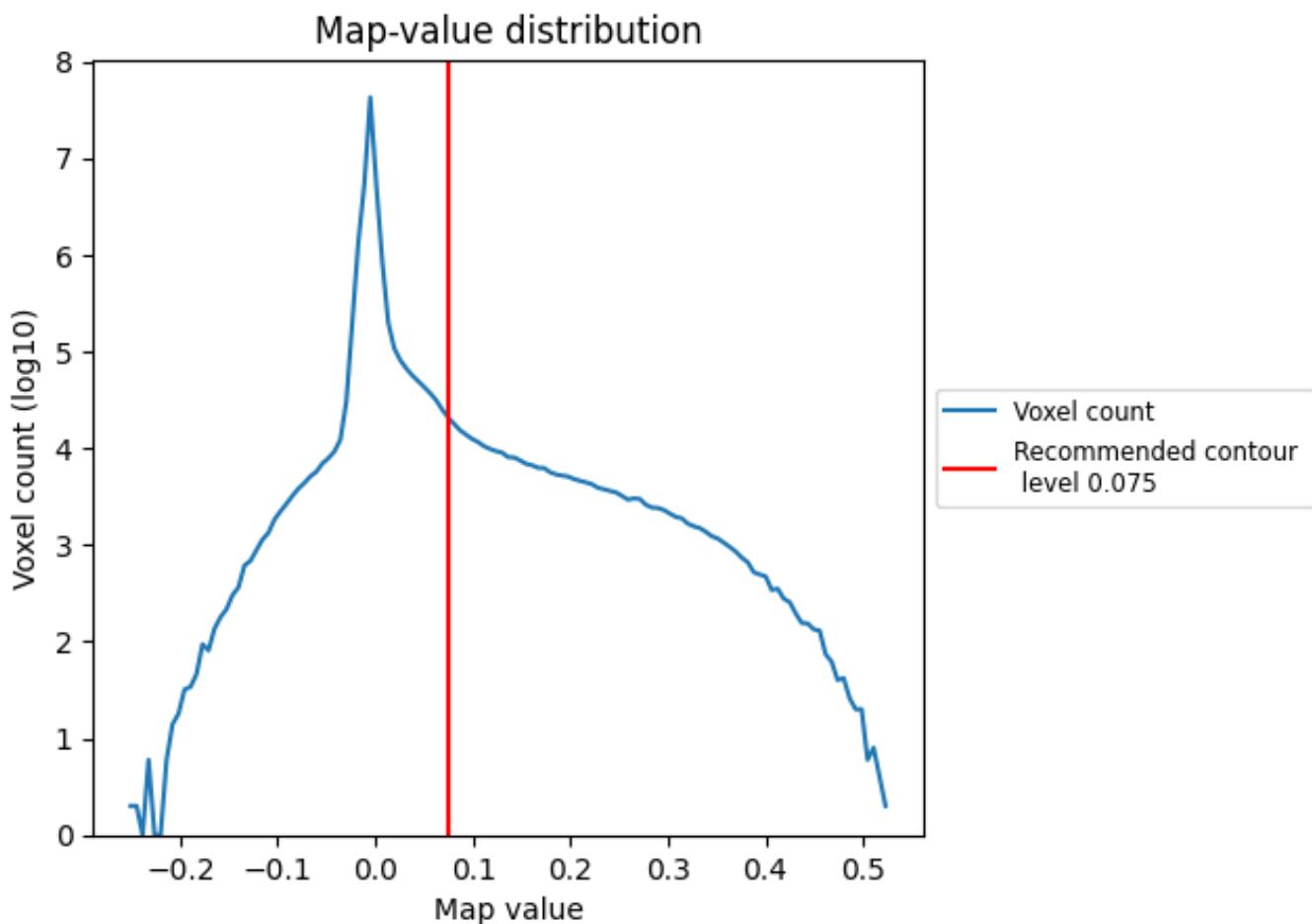
The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

7.2   Volume estimate ⓘ
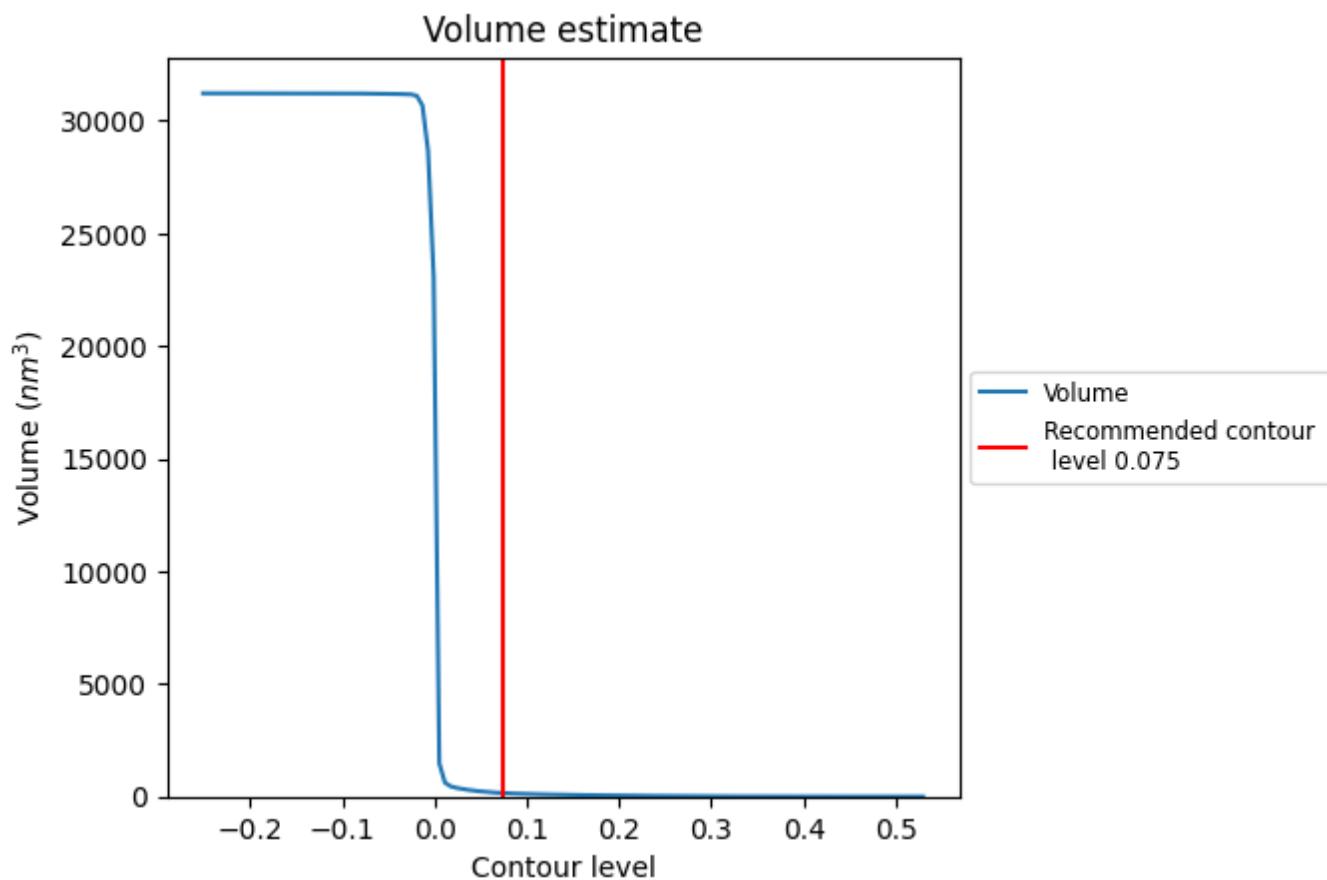
The volume at the recommended contour level is 153 nm³; this corresponds to an approximate mass of 138 kDa.

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 ⓘ
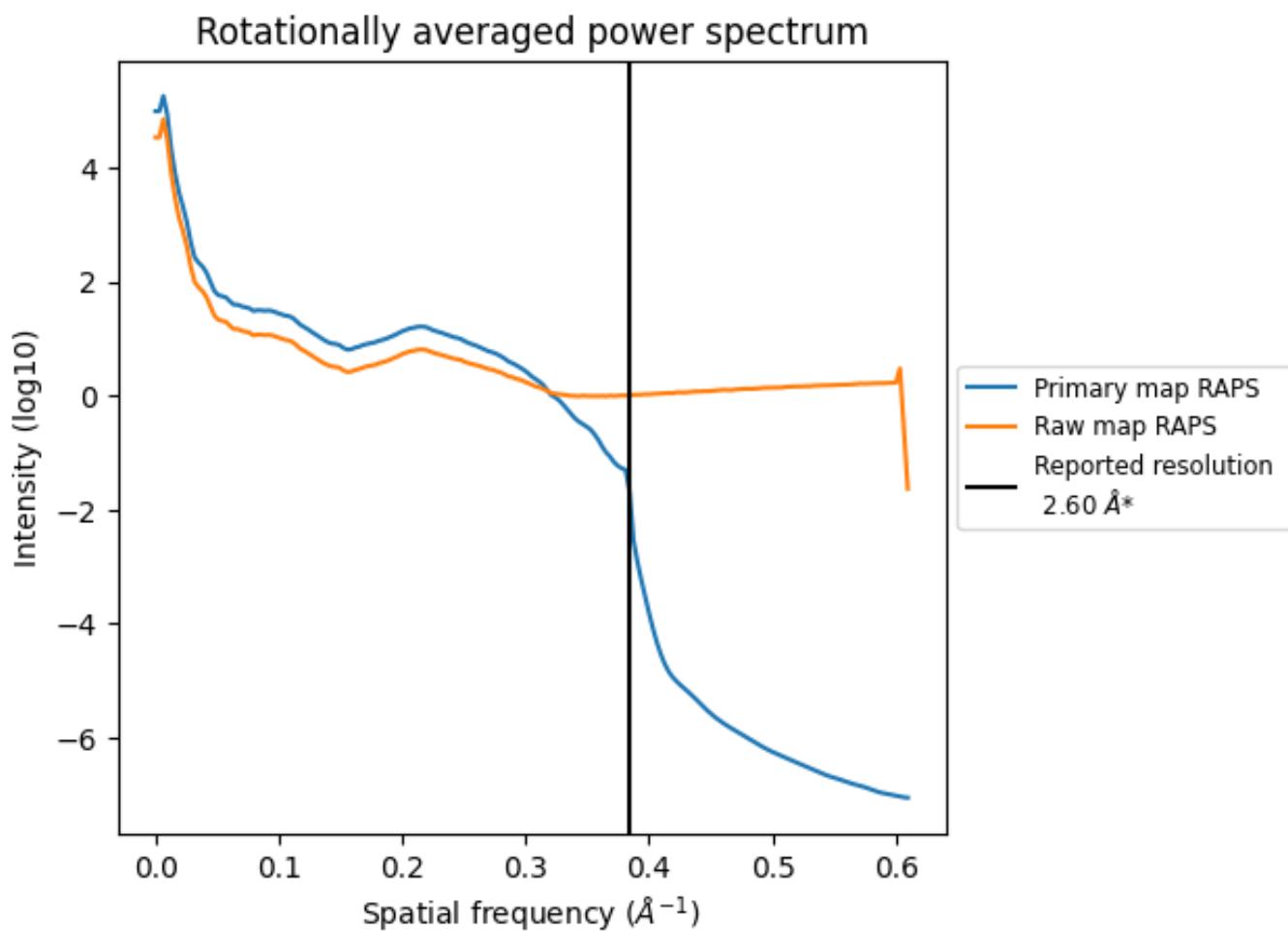
*Reported resolution corresponds to spatial frequency of 0.385 Å^{-1}

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 ⓘ
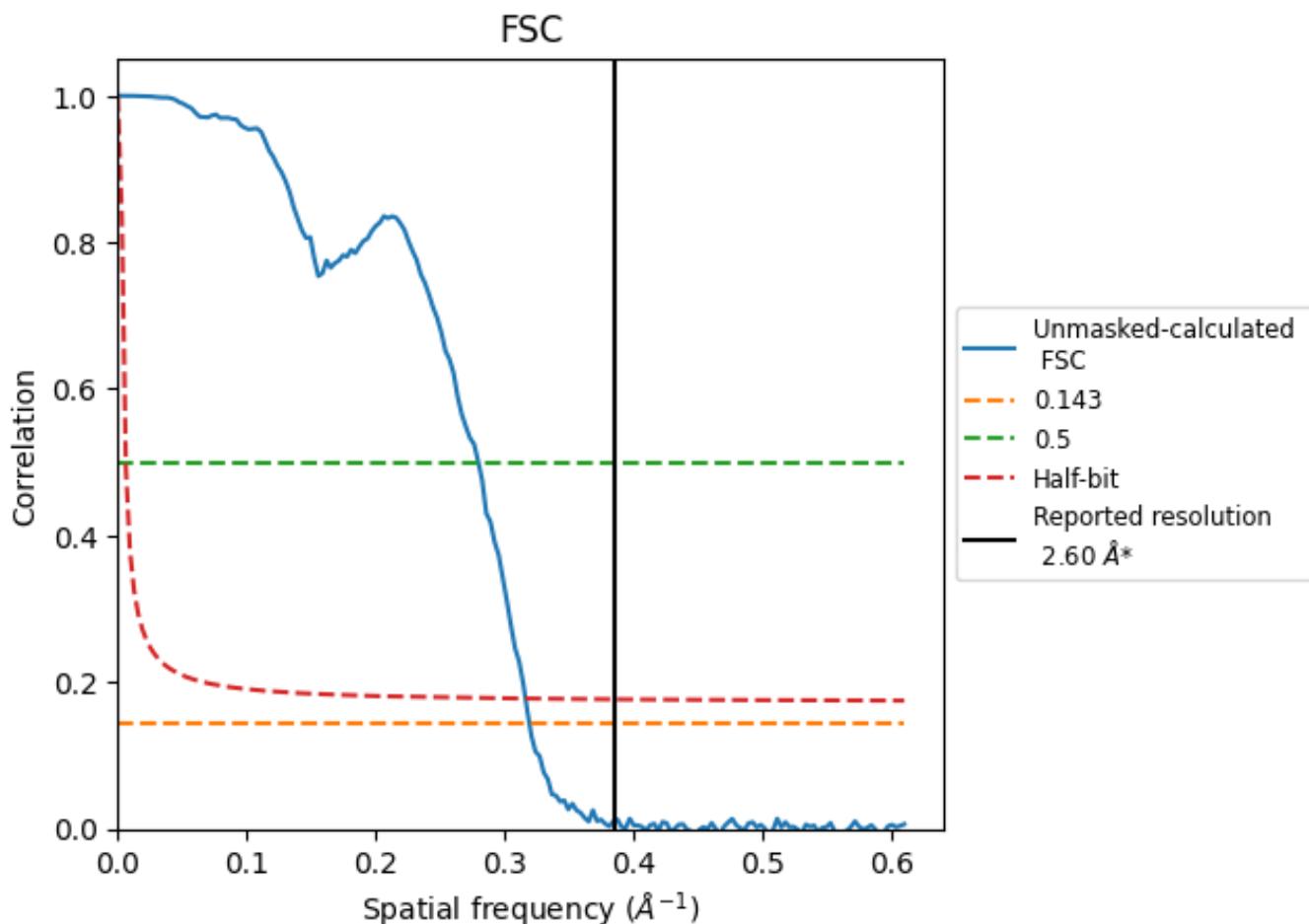
*Reported resolution corresponds to spatial frequency of 0.385 Å^{-1}

8.2   Resolution estimates ⓘ

Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.60	-	-
Author-provided FSC curve	-	-	-
Unmasked-calculated*	3.13	3.58	3.16

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 3.13 differs from the reported value 2.6 by more than 10 %

9 Map-model fit (i)

This section contains information regarding the fit between EMDB map EMD-16630 and PDB model 8CG4. Per-residue inclusion information can be found in section 3 on page 7.

9.1 Map-model overlay (i)

| X | Y | Z |
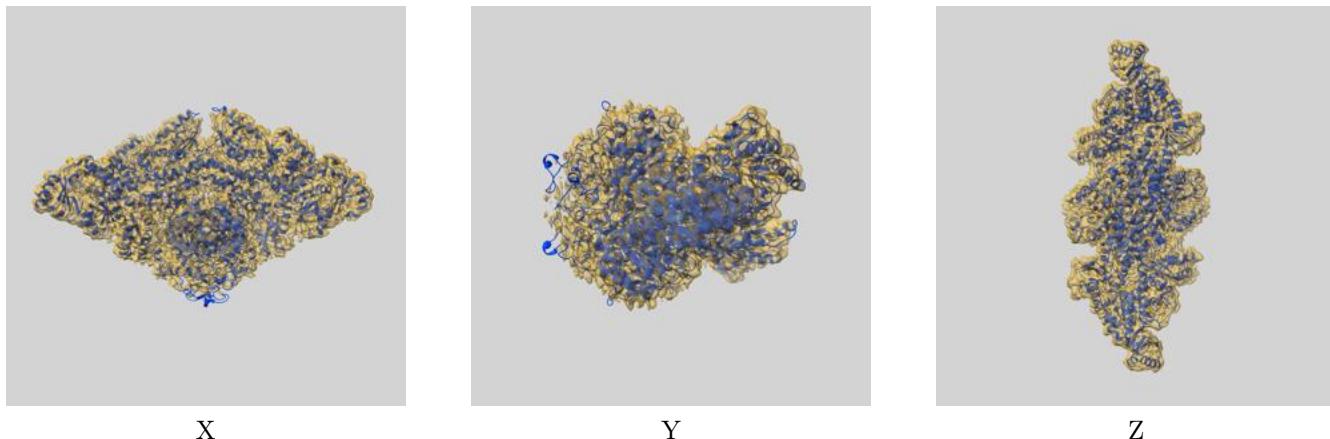
The images above show the 3D surface view of the map at the recommended contour level 0.075 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

9.2 Q-score mapped to coordinate model ⓘ

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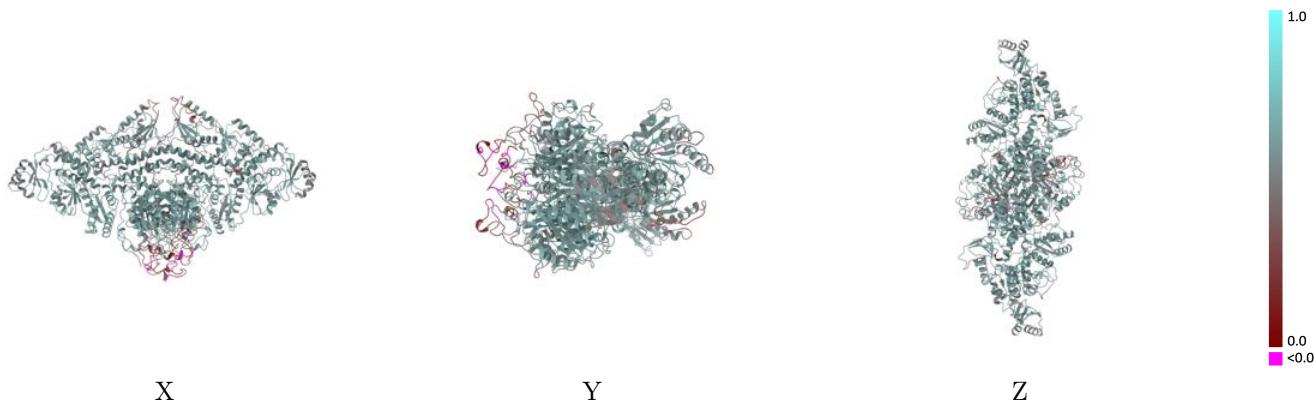
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions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

9.3 Atom inclusion mapped to coordinate model ⓘ

X   Y   Z
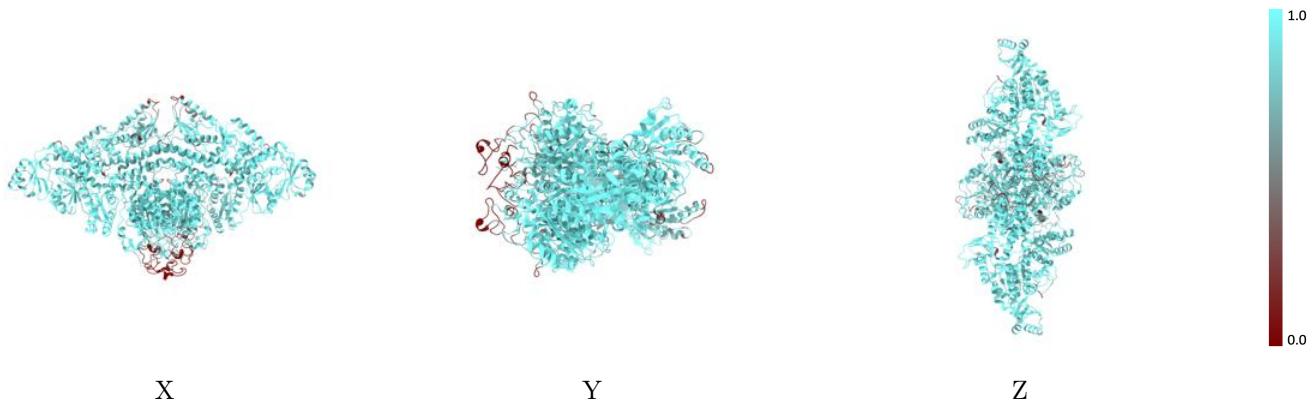
The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.075).

9.4　Atom inclusion　ⓘ
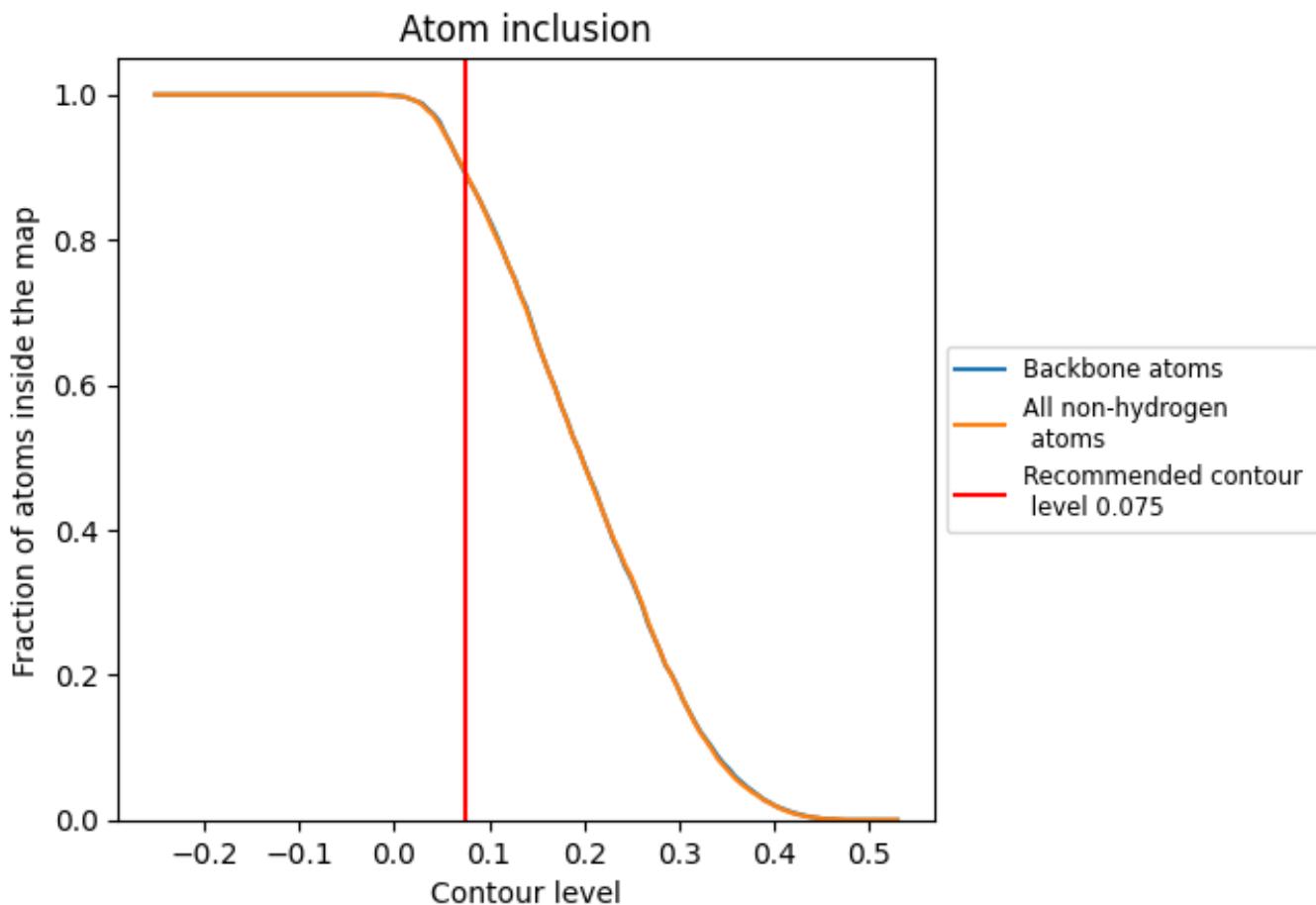
At the recommended contour level, 89% of all backbone atoms, 89% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary ⓘ

The table lists the average atom inclusion at the recommended contour level (0.075) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.8930	0.5520
A	0.8930	0.5510
B	0.8960	0.5540

1.0

0.0
<0.0