WORLDWIDE PDB

PROTEIN DATA BANK

wwPDB EM Validation Summary Report (i)

Feb 9, 2026 – 02:00 PM EST

PDB ID	:	9ZZ6 / pdb_00009zz6
EMDB ID	:	EMD-74981
Title	:	The ER membrane protein complex acts as a chaperone to promote voltage-gated calcium channel assembly
Authors	:	Singal, B.; Biswal, M.; Pleiner, T.
Deposited on	:	2026-01-06
Resolution	:	4.16 Å(reported)
Based on initial models	:	8s9s, .

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

EMDB validation analysis	:	0.0.1.dev131
Mogul	:	2022.3.0, CSD as543be (2022)
MolProbity	:	4-5-2 with Phenix2.0
buster-report	:	1.1.7 (2018)
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)	:	2.48

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 4.16 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.
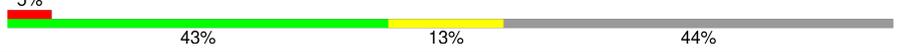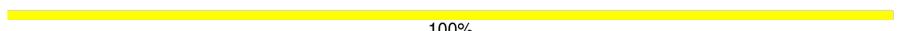
Metric	Percentile Ranks	Value
Clashscore		7
Ramachandran outliers		0
Sidechain outliers		0

Worse   *Better*

▮ Percentile relative to all structures

▯ Percentile relative to all EM structures

Metric	Model-Map Fit Percentile Ranks	Value
Q-score		0.323

Worse   *Better*

▮ Percentile relative to all EM structures

▯ Percentile relative to EM structures of similar resolution
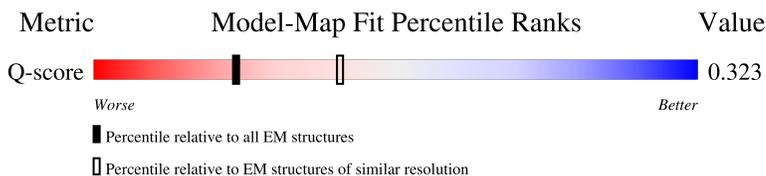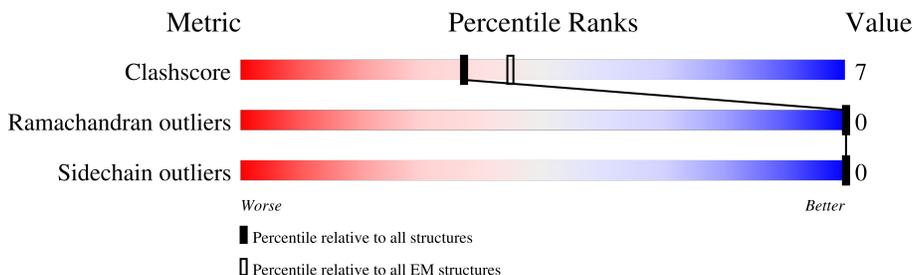
Metric	Whole archive (#Entries)	EM structures (#Entries)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	210492	15764	-
Ramachandran outliers	207382	16835	-
Sidechain outliers	206894	16415	-
Q-score	-	25397	5480 (3.66 - 4.66)

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	993	80% 16% 5%
2	B	297	81% 16% •
3	C	261	11% 84% 15% •
4	D	183	25% 72% 14% 14%

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Mol	Chain	Length	Quality of chain
5	E	131	63% 17% 21%
6	F	110	69% 23% 8%
7	G	242	5% 43% 13% 44%
8	H	210	75% 21%
9	I	262	50% 9% 41%
10	K	161	59% 15% 26%
11	L	132	72% 14% 14%
12	J	2	100%
12	M	2	100%
12	N	2	100%

2 Entry composition ⓘ

There are 13 unique types of molecules in this entry. The entry contains 41010 atoms, of which 20450 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 ER membrane protein complex subunit 1.

Mol	Chain	Residues	Atoms						AltConf	Trace
1	A	947	Total 15137	C 4836	H 7597	N 1293	O 1386	S 25	0	0

- Molecule 2 is a protein called ER membrane protein complex subunit 2.

Mol	Chain	Residues	Atoms						AltConf	Trace
2	B	291	Total 4756	C 1508	H 2353	N 425	O 456	S 14	0	0

- Molecule 3 is a protein called ER membrane protein complex subunit 3.

Mol	Chain	Residues	Atoms						AltConf	Trace
3	C	259	Total 4208	C 1355	H 2117	N 341	O 380	S 15	0	0

- Molecule 4 is a protein called ER membrane protein complex subunit 4.

Mol	Chain	Residues	Atoms						AltConf	Trace
4	D	158	Total 2491	C 802	H 1260	N 199	O 215	S 15	0	0

- Molecule 5 is a protein called Membrane magnesium transporter 1.

Mol	Chain	Residues	Atoms						AltConf	Trace
5	E	104	Total 1649	C 533	H 824	N 143	O 145	S 4	0	0

- Molecule 6 is a protein called ER membrane protein complex subunit 6.

Mol	Chain	Residues	Atoms						AltConf	Trace
6	F	101	Total 1598	C 528	H 812	N 128	O 128	S 2	0	0

- Molecule 7 is a protein called ER membrane protein complex subunit 7.

Mol	Chain	Residues	Atoms						AltConf	Trace
7	G	136	Total 1987	C 651	H 970	N 180	O 183	S 3	0	0

- Molecule 8 is a protein called ER membrane protein complex subunit 8.

Mol	Chain	Residues	Atoms						AltConf	Trace
8	H	202	Total 3146	C 1012	H 1542	N 280	O 299	S 13	0	0

- Molecule 9 is a protein called ER membrane protein complex subunit 10.

Mol	Chain	Residues	Atoms						AltConf	Trace
9	I	154	Total 2333	C 731	H 1152	N 215	O 232	S 3	0	0

- Molecule 10 is a protein called Nanobody G9.

Mol	Chain	Residues	Atoms						AltConf	Trace
10	K	119	Total 1811	C 572	H 900	N 160	O 175	S 4	0	0

- Molecule 11 is a protein called Nanobody E2.

Mol	Chain	Residues	Atoms						AltConf	Trace
11	L	114	Total 1708	C 540	H 835	N 157	O 172	S 4	0	0

- Molecule 12 is an oligosaccharide called 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.
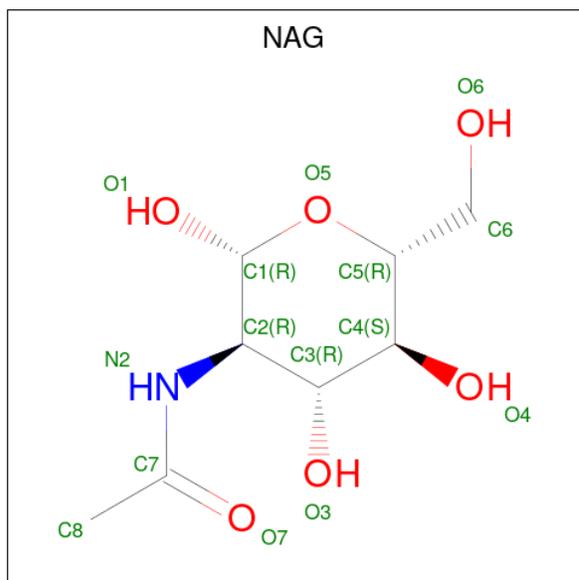

Mol	Chain	Residues	Atoms					AltConf	Trace
12	J	2	Total 53	C 16	H 25	N 2	O 10	0	0
12	M	2	Total 53	C 16	H 25	N 2	O 10	0	0

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Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	H	N	O		
12	N	2	53	16	25	2	10	0	0

- Molecule 13 is 2-acetamido-2-deoxy-beta-D-glucopyranose (CCD ID: NAG) (formula: $C_8H_{15}NO_6$) (labeled as "Ligand of Interest" by depositor).

Mol	Chain	Residues	Atoms					AltConf
			Total	C	H	N	O	
13	A	1	27	8	13	1	5	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: ER membrane protein complex subunit 1

Chain A:

80% 16% 5%

- Molecule 2: ER membrane protein complex subunit 2

Chain B:

81% 16%

- Molecule 3: ER membrane protein complex subunit 3

Chain C:

• Molecule 4: ER membrane protein complex subunit 4

Chain D:

• Molecule 5: Membrane magnesium transporter 1

Chain E:

• Molecule 6: ER membrane protein complex subunit 6

Chain F:

• Molecule 7: ER membrane protein complex subunit 7

Chain G:

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

• Molecule 8: ER membrane protein complex subunit 8

Chain H:

75%   21%   •

M1 P2 A10 Y11 M14 V15 L16 P22 H23 N27 G28 L29 L30 K34 P37 ARG LYS GLU HIS LEU PRO LEU GLY G46 P47 T52 C57 I58 P59 L65 A66 L67 A68 P69 A74 L75 I78 V88 I89 A90 G91 Y92 Y93 Q94 A95 A112

I125 M126 V127 K131 F132 T140 W151 I170 L174 L175 L183 V184 D185 N188 R194 N195 N203 L207 H208 L209 C210

• Molecule 9: ER membrane protein complex subunit 10

Chain I:

50%   9%   41%

MET ALA ALA SER ALA GLY ALA THR ARG LEU LEU LEU LEU LEU MET ALA VAL ALA ALA PRO SER ARG ARG GLY SER GLY CYS ARG ALA GLY THR GLY ALA ARG GLY ALA GLU GLU ARG GLU GLU GLY GLU ALA CYS G50 F60 E61 I62 D63 D80 L90

E94 V101 L104 L107 Y108 R109 P116 GLY ALA LEU ASP GLY LEU GLU A124 V128 D144 Q145 L146 T147 V150 G158 V161 R169 T183 S184 V185 P190 F201 R204 M207 E208 Q209 A210 GLN LYS ALA LYS ASN PRO GLN GLU GLN LYS SER

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

• Molecule 10: Nanobody G9

Chain K:

59%   15%   26%

GLY SER GLY SER GLY SER GLY SER GLY THR SER GLY SER SER GLY SER SER CYS SER SER Q1 V2 V5 E6 G9 G15 C22 N27 I28 I31 G42 F47 V48 A49 T53 T57 A60 K64 I69 N73 A74 K75 V78 Y79 L80

L85 D89 I97 Q107 L110 V113 S114 S115 T116 S117 S118 S119 GLY SER GLY SER GLY SER GLY THR GLY SER HIS HIS HIS HIS HIS HIS HIS HIS HIS

• Molecule 11: Nanobody E2

Chain L:

72%   14%   14%

GLY SER GLY SER GLY SER GLY SER GLY SER GLY SER GLY SER GLY SER THR SER Q1 V12 G15 L18 R19 L20 F29 M34 S35 W36 H37 R38 P41 G42 K43 E44 I51 T58 K76 A79 Y80 L81 Q82 M83 V93 Y94 Q109 S114

• Molecule 12: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain J:

100%

NAG1
NAG2

• Molecule 12: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glu
copyranose

Chain M:

100%

NAG1
NAG2

• Molecule 12: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glu
copyranose

Chain N:

100%

NAG1
NAG2

4 Experimental information ⓘ

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	43012	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 $(e^-/\text{Å}^2)$	54.23	Depositor
Minimum defocus (nm)	600	Depositor
Maximum defocus (nm)	2000	Depositor
Magnification	130000	Depositor
Image detector	TFS FALCON 4i (4k x 4k)	Depositor
Maximum map value	0.120	Depositor
Minimum map value	-0.049	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.003	Depositor
Recommended contour level	0.025	Depositor
Map size (Å)	441.6, 441.6, 441.6	wwPDB
Map dimensions	480, 480, 480	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.92, 0.92, 0.92	Depositor

5 Model quality ⓘ

5.1 Standard geometry ⓘ

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

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	0.11	0/7713	0.28	0/10476
2	B	0.10	0/2447	0.27	0/3288
3	C	0.10	0/2140	0.26	0/2895
4	D	0.13	0/1260	0.35	0/1701
5	E	0.14	0/846	0.35	0/1144
6	F	0.14	0/808	0.35	0/1095
7	G	0.12	0/1042	0.34	0/1418
8	H	0.12	0/1647	0.30	0/2242
9	I	0.11	0/1201	0.28	0/1630
10	K	0.11	0/929	0.27	0/1258
11	L	0.12	0/890	0.29	0/1201
All	All	0.11	0/20923	0.29	0/28348

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	7540	7597	7597	105	0
2	B	2403	2353	2353	41	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	C	2091	2117	2117	27	0
4	D	1231	1260	1260	20	0
5	E	825	824	824	19	0
6	F	786	812	812	21	0
7	G	1017	970	970	24	0
8	H	1604	1542	1542	31	0
9	I	1181	1152	1152	15	0
10	K	911	900	902	18	0
11	L	873	835	837	12	0
12	J	28	25	25	1	0
12	M	28	25	25	0	0
12	N	28	25	25	0	0
13	A	14	13	13	0	0
All	All	20560	20450	20454	304	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 7.

The worst 5 of 304 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:A:919:MET:HE2	1:A:922:ILE:HG13	1.65	0.78
9:I:128:VAL:HG11	9:I:158:GLY:HA2	1.68	0.74
1:A:377:LEU:HD13	1:A:419:TYR:CE2	2.22	0.73
1:A:377:LEU:HD13	1:A:419:TYR:CD2	2.24	0.73
2:B:189:HIS:HE1	5:E:73:THR:HG22	1.53	0.72

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	A	943/993 (95%)	907 (96%)	36 (4%)	0	100	100
2	B	289/297 (97%)	286 (99%)	3 (1%)	0	100	100
3	C	257/261 (98%)	246 (96%)	11 (4%)	0	100	100
4	D	154/183 (84%)	154 (100%)	0	0	100	100
5	E	102/131 (78%)	97 (95%)	5 (5%)	0	100	100
6	F	99/110 (90%)	94 (95%)	5 (5%)	0	100	100
7	G	134/242 (55%)	127 (95%)	7 (5%)	0	100	100
8	H	198/210 (94%)	189 (96%)	9 (4%)	0	100	100
9	I	150/262 (57%)	141 (94%)	9 (6%)	0	100	100
10	K	117/161 (73%)	111 (95%)	6 (5%)	0	100	100
11	L	112/132 (85%)	108 (96%)	4 (4%)	0	100	100
All	All	2555/2982 (86%)	2460 (96%)	95 (4%)	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	A	835/872 (96%)	835 (100%)	0	100	100
2	B	250/255 (98%)	250 (100%)	0	100	100
3	C	234/235 (100%)	234 (100%)	0	100	100
4	D	133/149 (89%)	133 (100%)	0	100	100
5	E	87/112 (78%)	87 (100%)	0	100	100
6	F	79/85 (93%)	79 (100%)	0	100	100
7	G	102/207 (49%)	102 (100%)	0	100	100
8	H	175/182 (96%)	175 (100%)	0	100	100
9	I	130/194 (67%)	130 (100%)	0	100	100
10	K	97/125 (78%)	97 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
11	L	92/100 (92%)	92 (100%)	0	100	100
All	All	2214/2516 (88%)	2214 (100%)	0	100	100

There are no protein residues with a non-rotameric sidechain to report.

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 13 such sidechains are listed below:

Mol	Chain	Res	Type
3	C	215	ASN
5	E	48	GLN
11	L	84	ASN
8	H	142	HIS
10	K	73	ASN

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 ⓘ

6 monosaccharides are modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. 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 $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
12	NAG	J	1	12,1	14,14,15	0.73	0	17,19,21	1.16	1 (5%)
12	NAG	J	2	12	14,14,15	0.71	0	17,19,21	0.83	0
12	NAG	M	1	12,1	14,14,15	0.73	0	17,19,21	0.87	0
12	NAG	M	2	12	14,14,15	0.72	0	17,19,21	0.83	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
12	NAG	N	1	12,9	14,14,15	0.71	0	17,19,21	0.88	0
12	NAG	N	2	12	14,14,15	0.71	0	17,19,21	0.81	0

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
12	NAG	J	1	12,1	-	0/6/23/26	0/1/1/1
12	NAG	J	2	12	-	0/6/23/26	0/1/1/1
12	NAG	M	1	12,1	-	0/6/23/26	0/1/1/1
12	NAG	M	2	12	-	0/6/23/26	0/1/1/1
12	NAG	N	1	12,9	-	0/6/23/26	0/1/1/1
12	NAG	N	2	12	-	0/6/23/26	0/1/1/1

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
12	J	1	NAG	C1-O5-C5	2.95	116.14	112.19

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

1 monomer is involved in 1 short contact:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
12	J	2	NAG	1	0

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for oligosaccharide.

Oligosaccharide Chain J

Bond lengths

Bond angles

Torsions

Rings

Oligosaccharide Chain M

Bond lengths

Bond angles

Torsions

Rings

Oligosaccharide Chain N

Bond lengths

Bond angles

Torsions

Rings
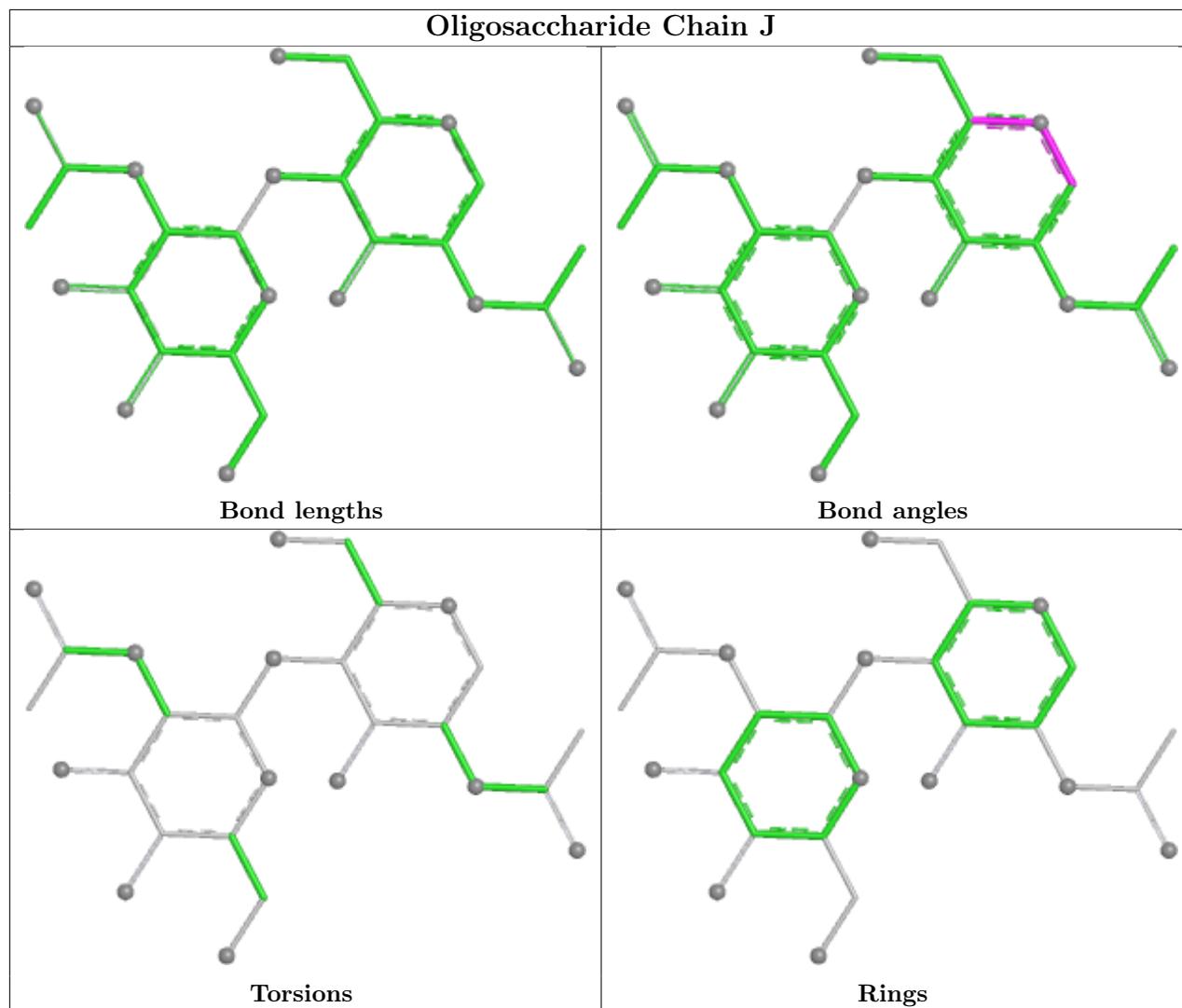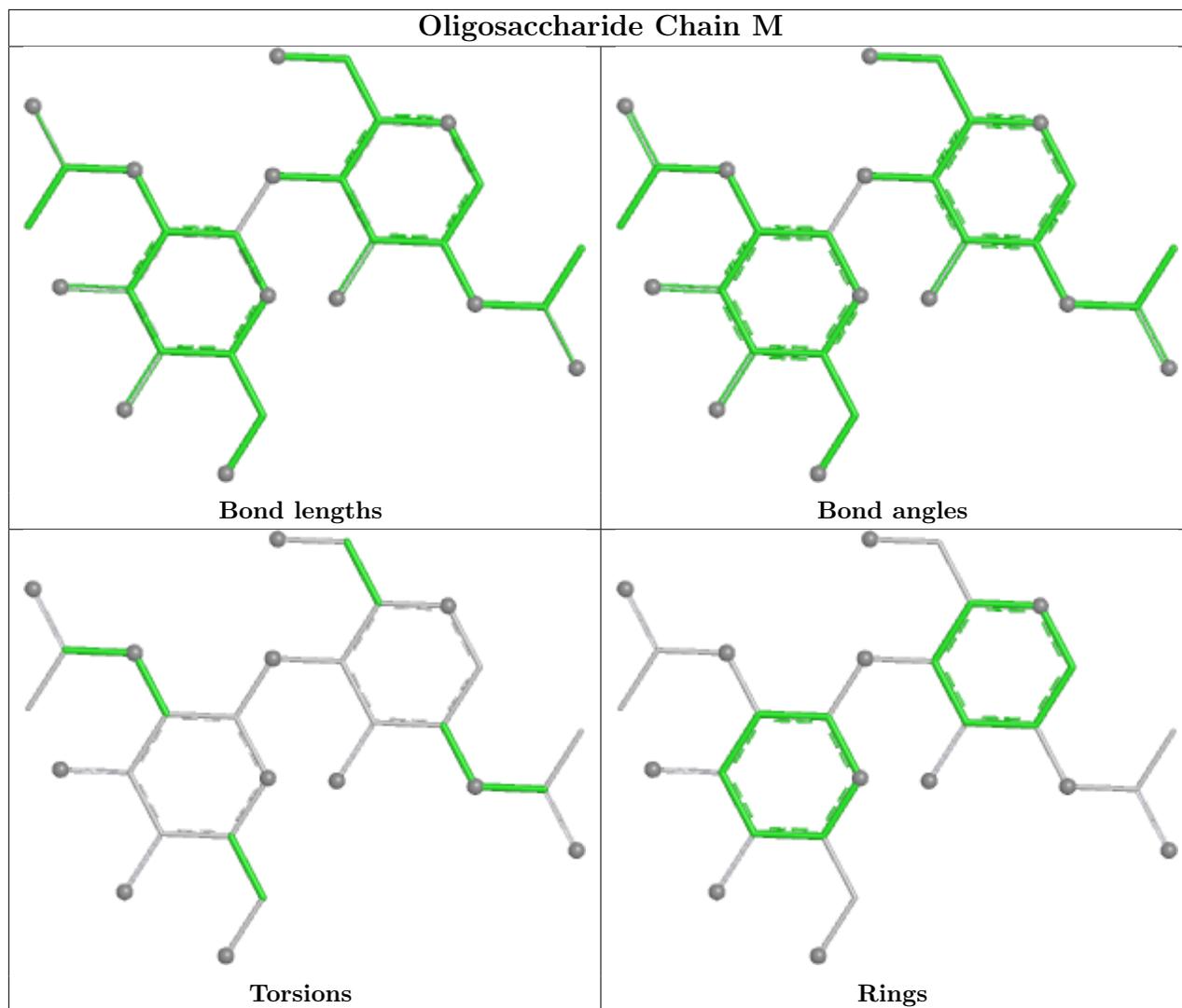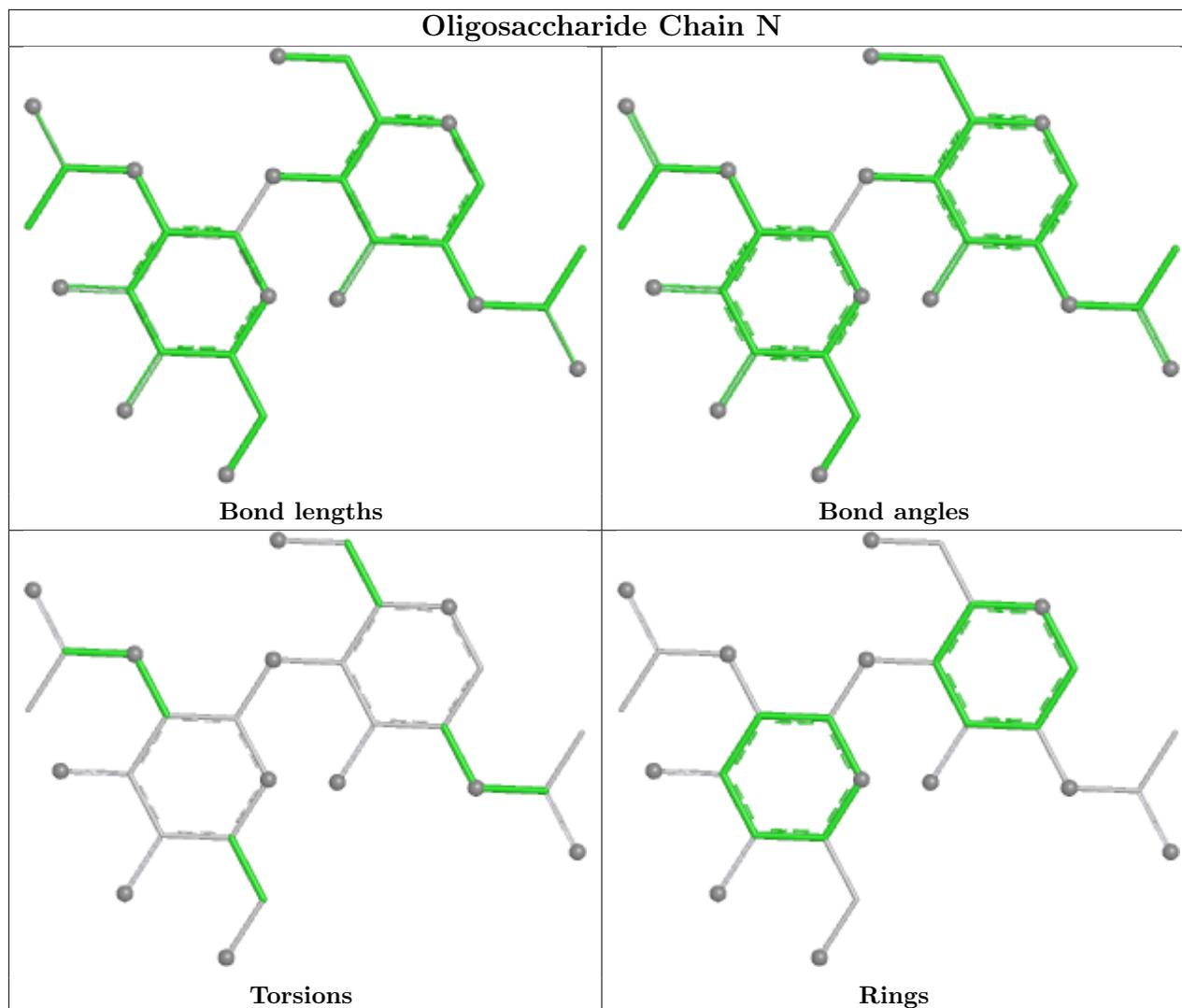
5.6 Ligand geometry (i)

1 ligand is modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. 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 $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#|Z| > 2$	Counts	RMSZ	$\#|Z| > 2$
13	NAG	A	1001	1	14,14,15	0.71	0	17,19,21	0.79	0

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral

centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
13	NAG	A	1001	1	-	1/6/23/26	0/1/1/1

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (1) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
13	A	1001	NAG	O5-C5-C6-O6

There are no ring outliers.

No monomer is involved in short contacts.

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less then 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.

Ligand NAG A 1001

Bond lengths

Bond angles

Torsions

Rings
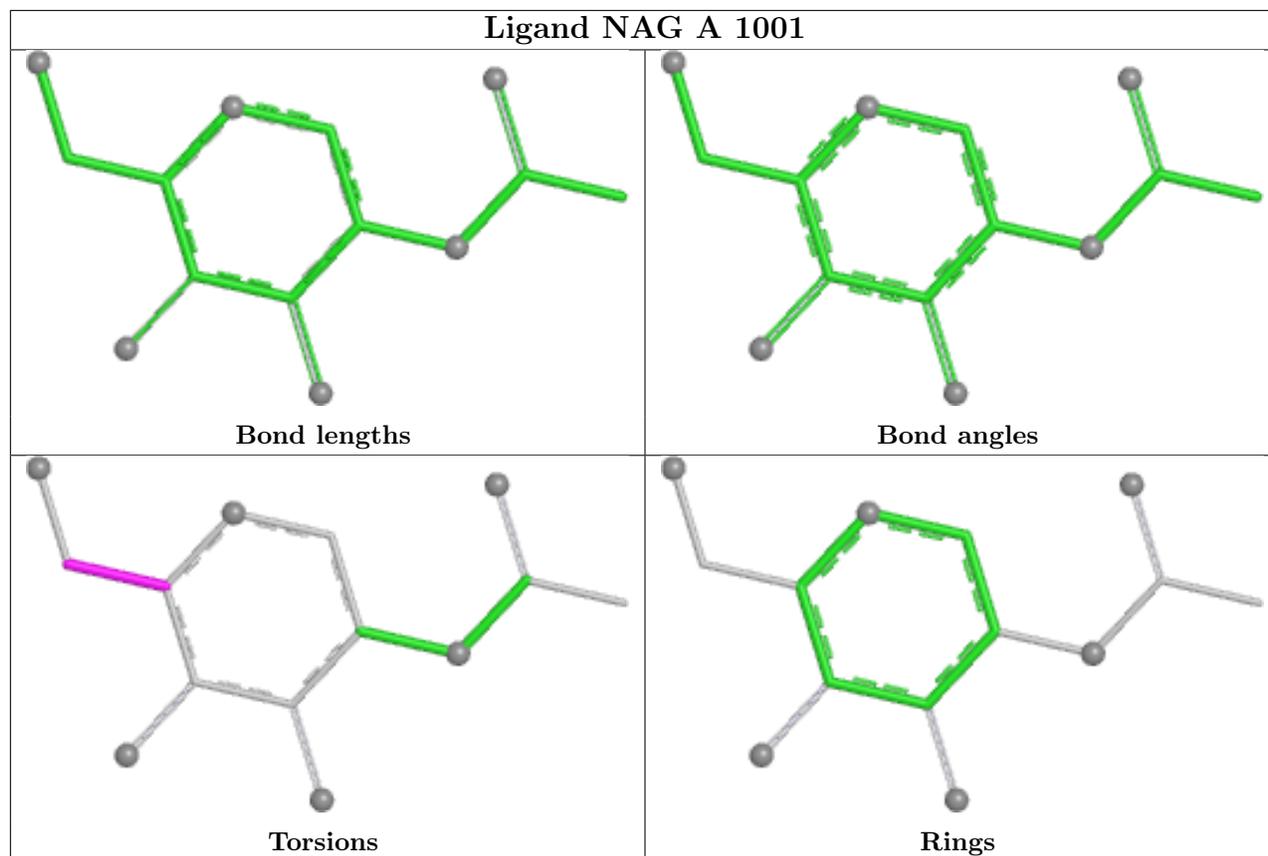
5.7 Other polymers ⓘ

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-74981. These allow visual inspection of the internal detail of the map and identification of artifacts.

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

6.1   Orthogonal projections ⓘ
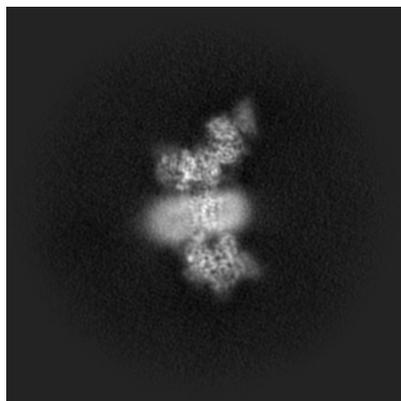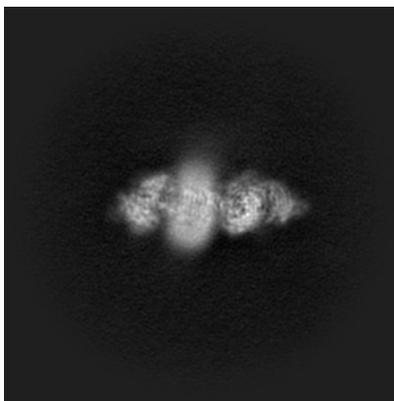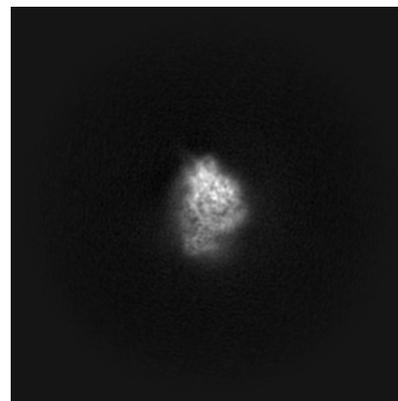
6.1.1   Primary map

X   Y   Z

6.1.2   Raw map

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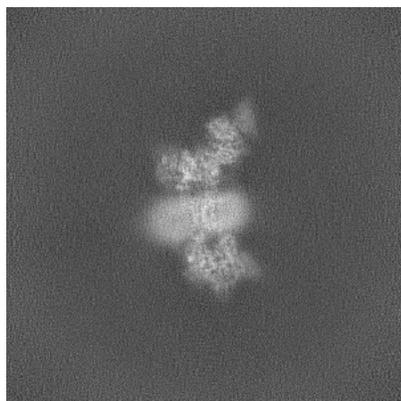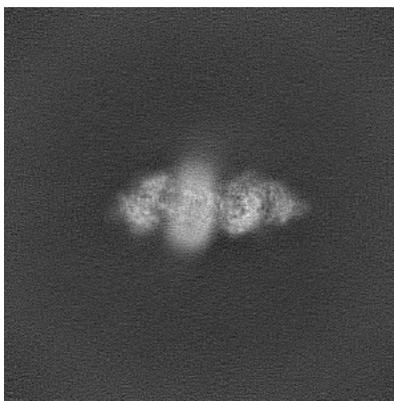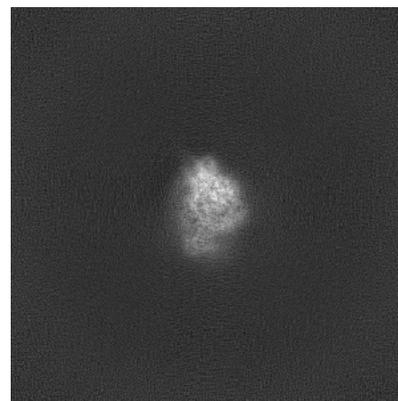
The images above show the map projected in three orthogonal directions.

6.2 Central slices (i)

6.2.1 Primary map
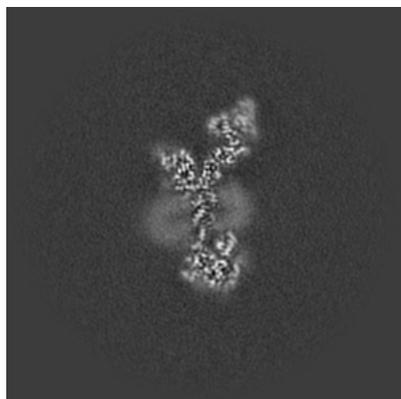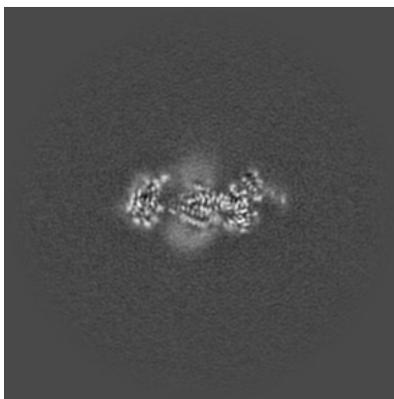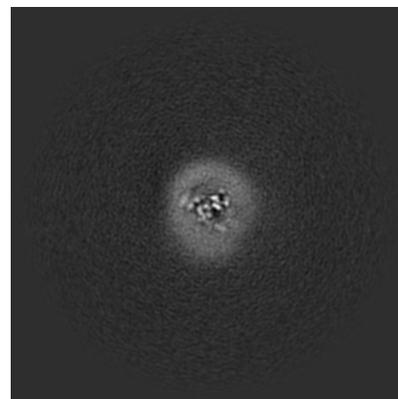
| X Index: 240 | Y Index: 240 | Z Index: 240 |

6.2.2 Raw map
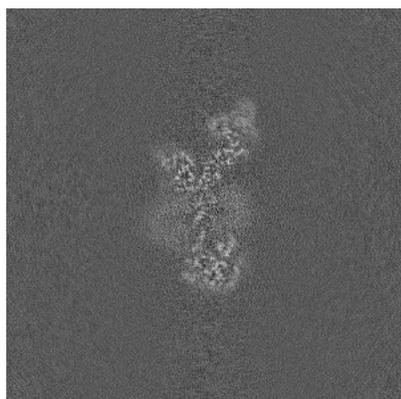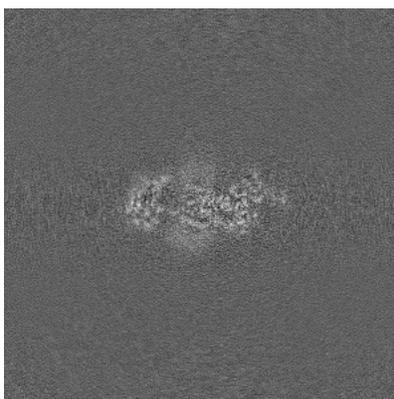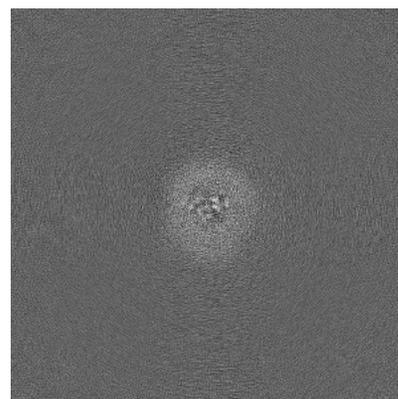
| X Index: 240 | Y Index: 240 | Z Index: 240 |

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

6.3 Largest variance slices (i)

6.3.1 Primary map
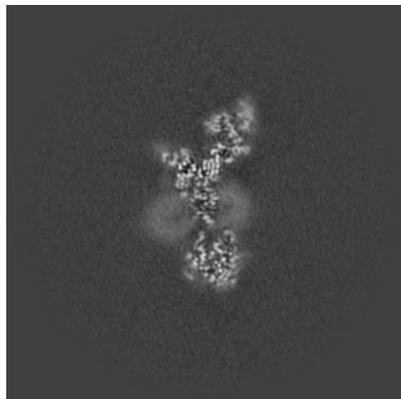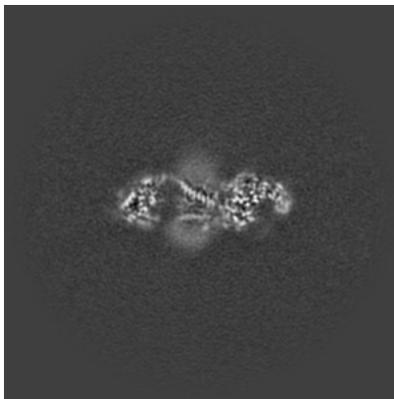
X Index: 244   Y Index: 249   Z Index: 293
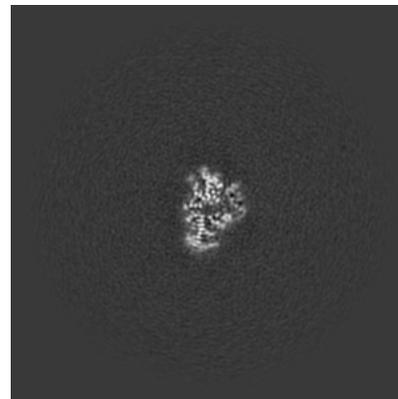
6.3.2 Raw map
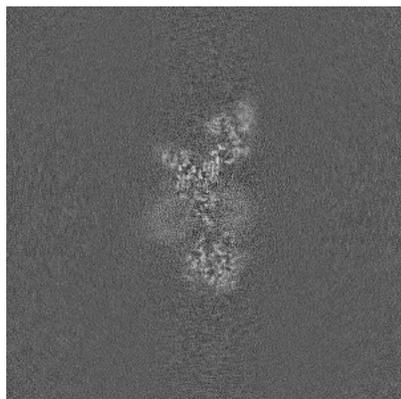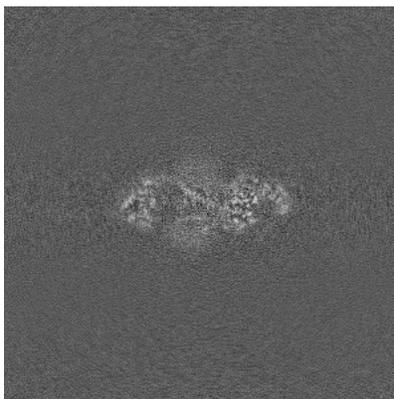
X Index: 244   Y Index: 248   Z Index: 479
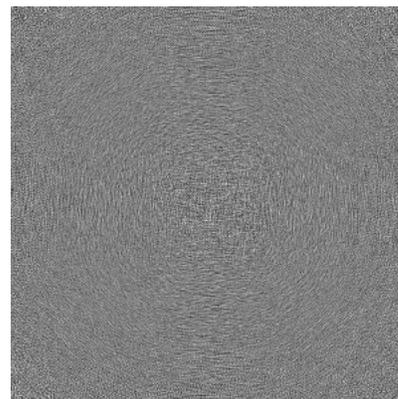
The images above show the largest variance slices of the map in three orthogonal directions.

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

6.4.1 Primary map

X   Y   Z

6.4.2 Raw map

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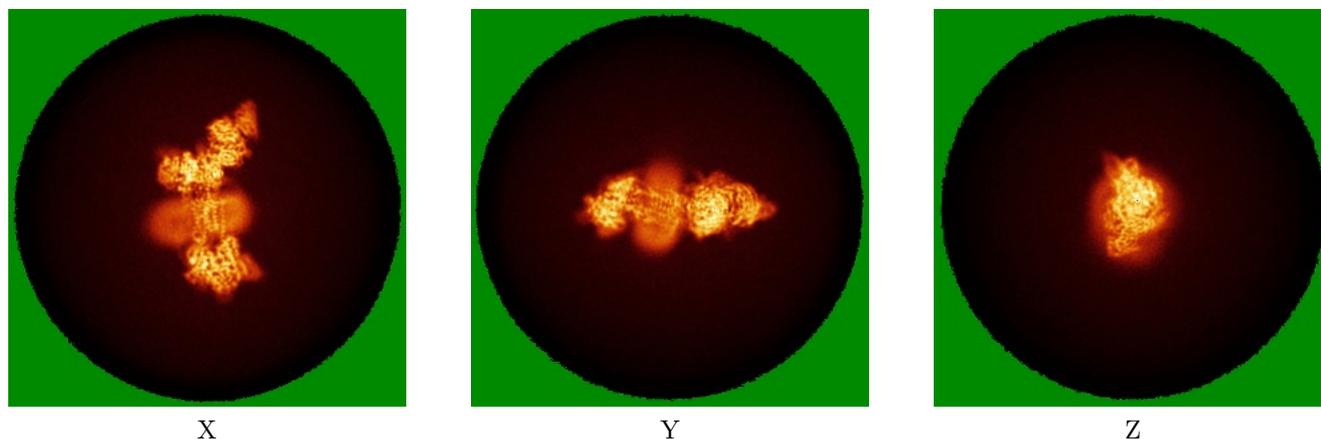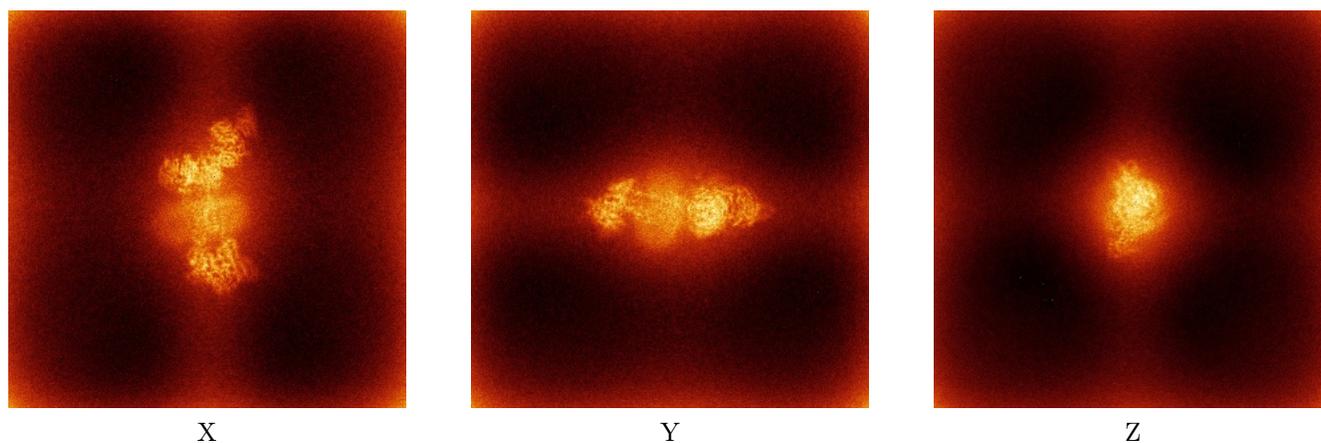
The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

6.5 Orthogonal surface views (i)

6.5.1 Primary map

X	Y	Z
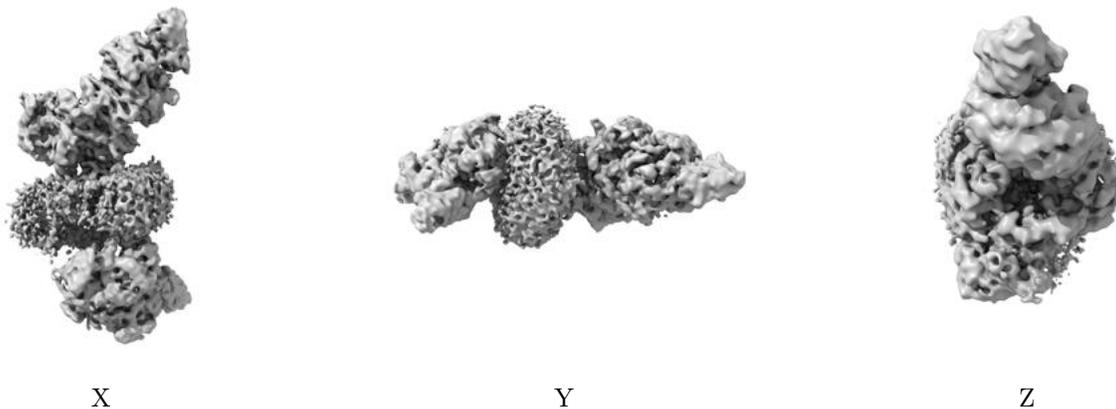
The images above show the 3D surface view of the map at the recommended contour level 0.025. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map

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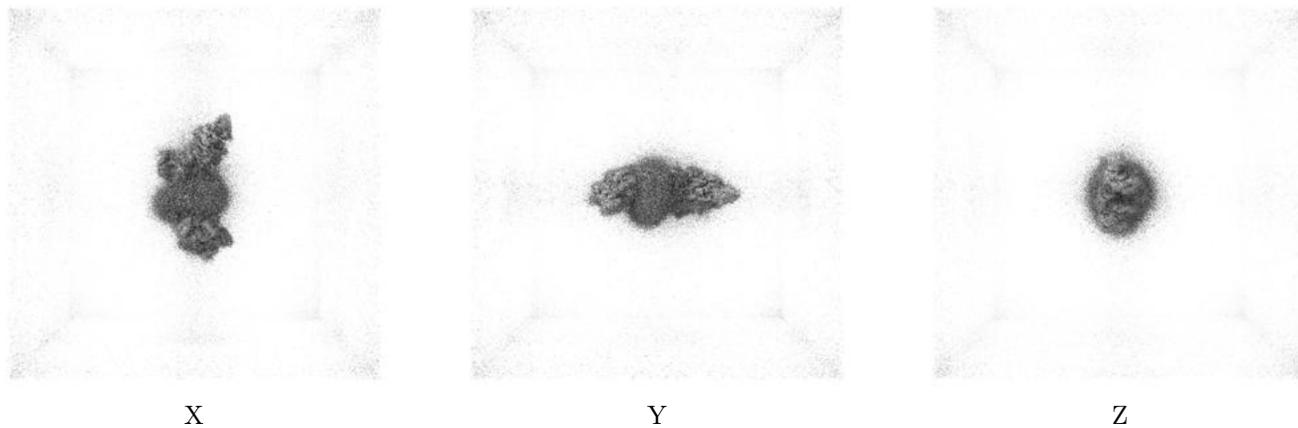
These images show the 3D surface of the raw map. The raw map's contour level was selected so that its surface encloses the same volume as the primary map does at its recommended contour level.

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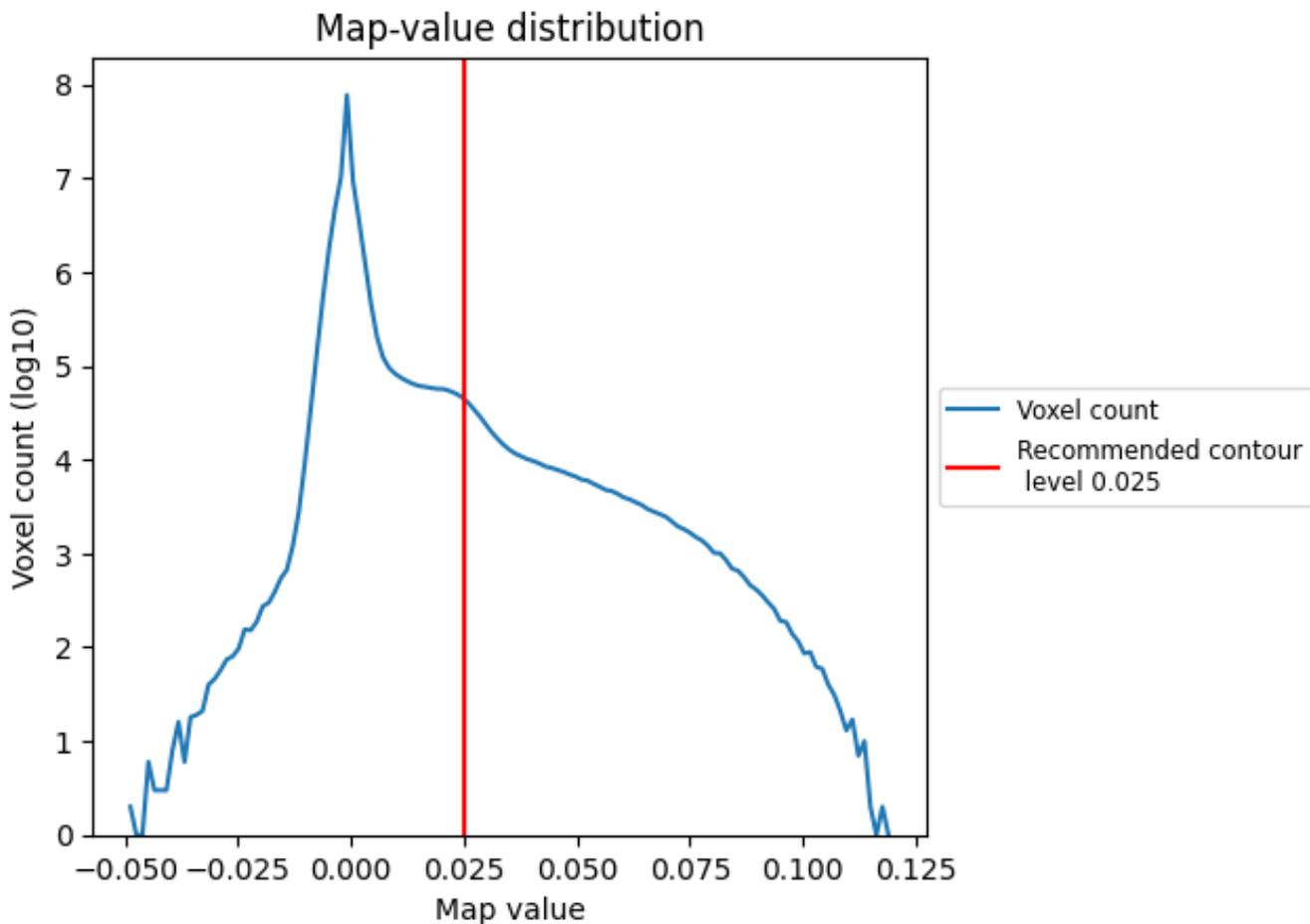
The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

7.2 Volume estimate ⓘ
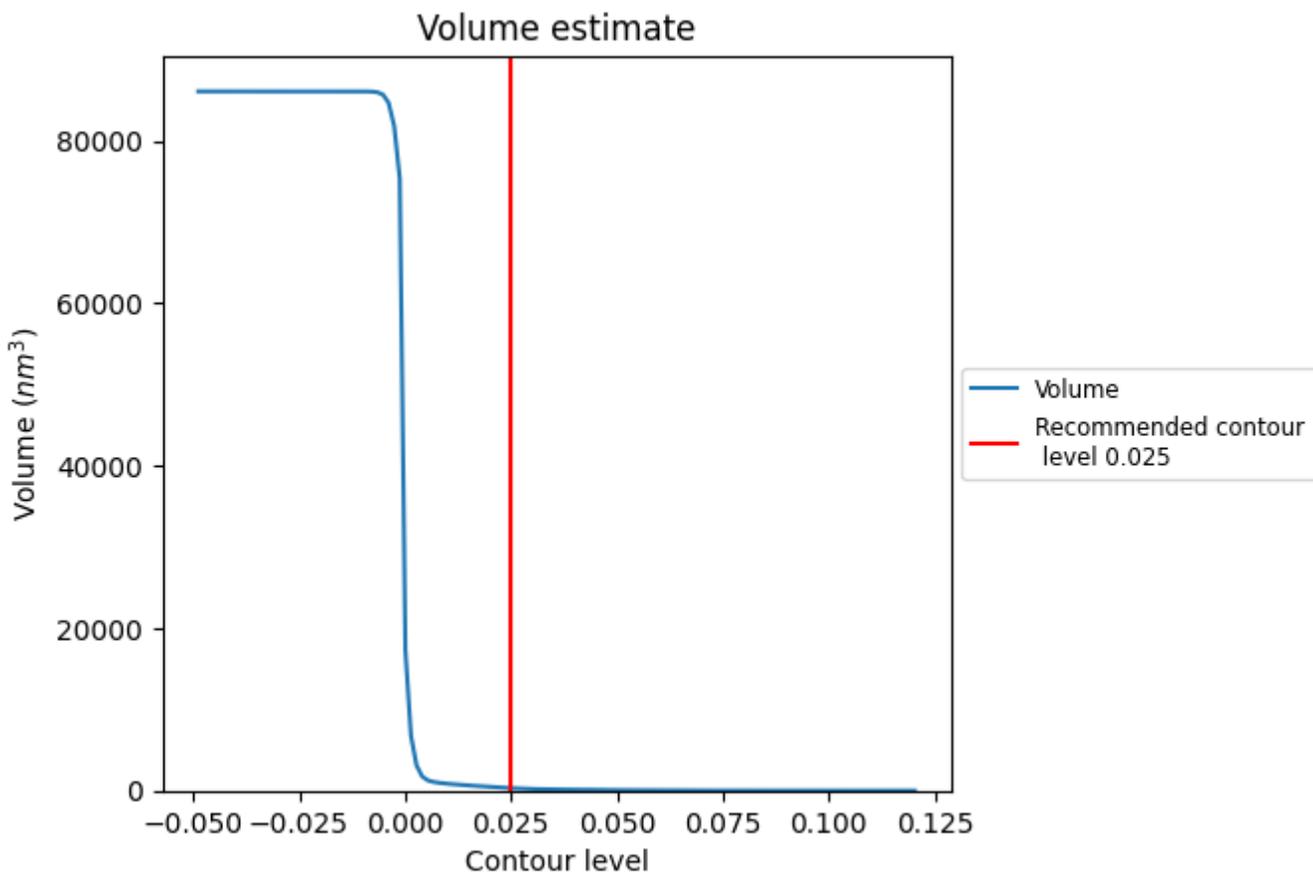
The volume at the recommended contour level is 309 nm^3; this corresponds to an approximate mass of 279 kDa.

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 ⓘ
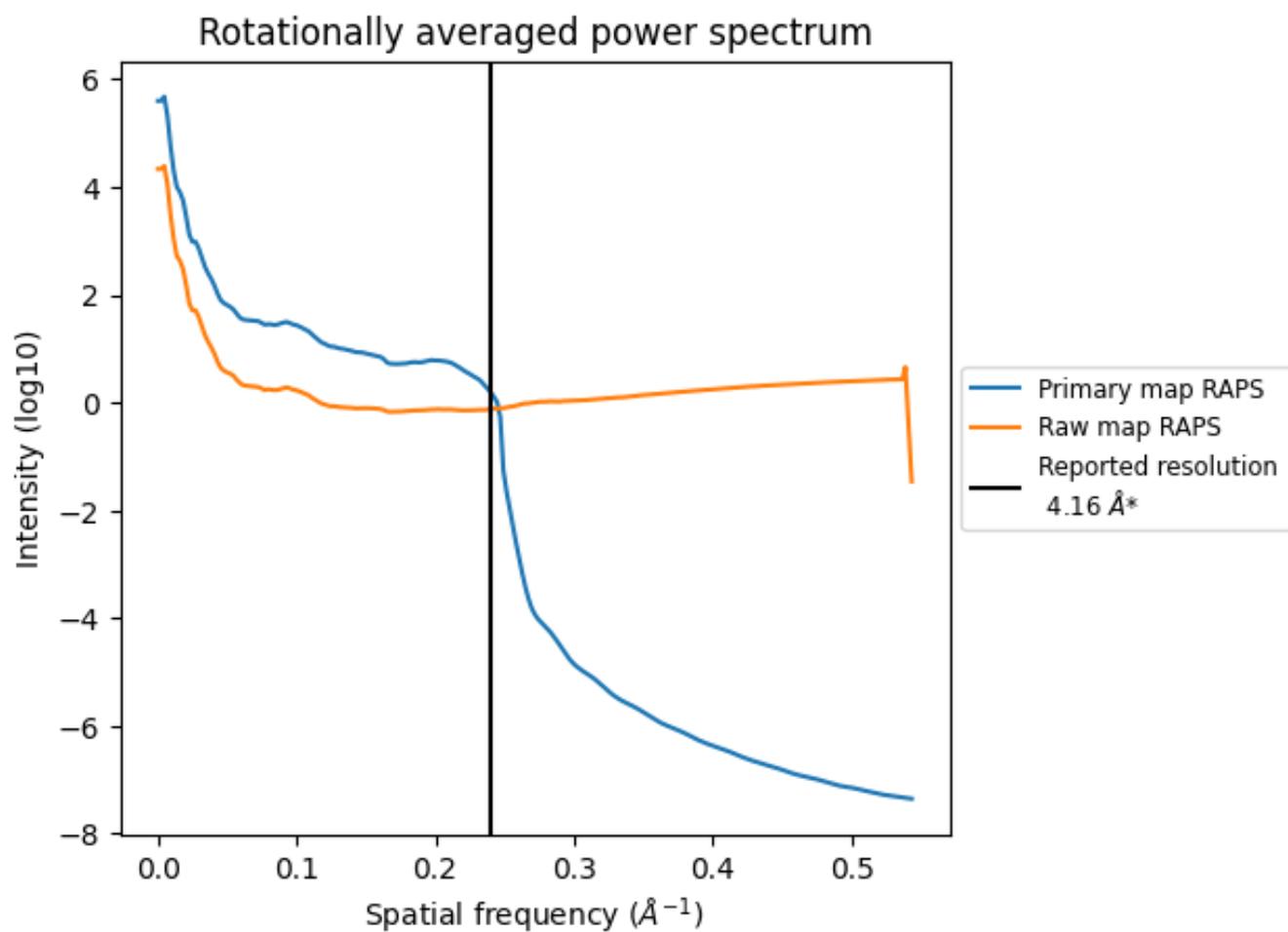
*Reported resolution corresponds to spatial frequency of 0.240 Å^{-1}

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 ⓘ
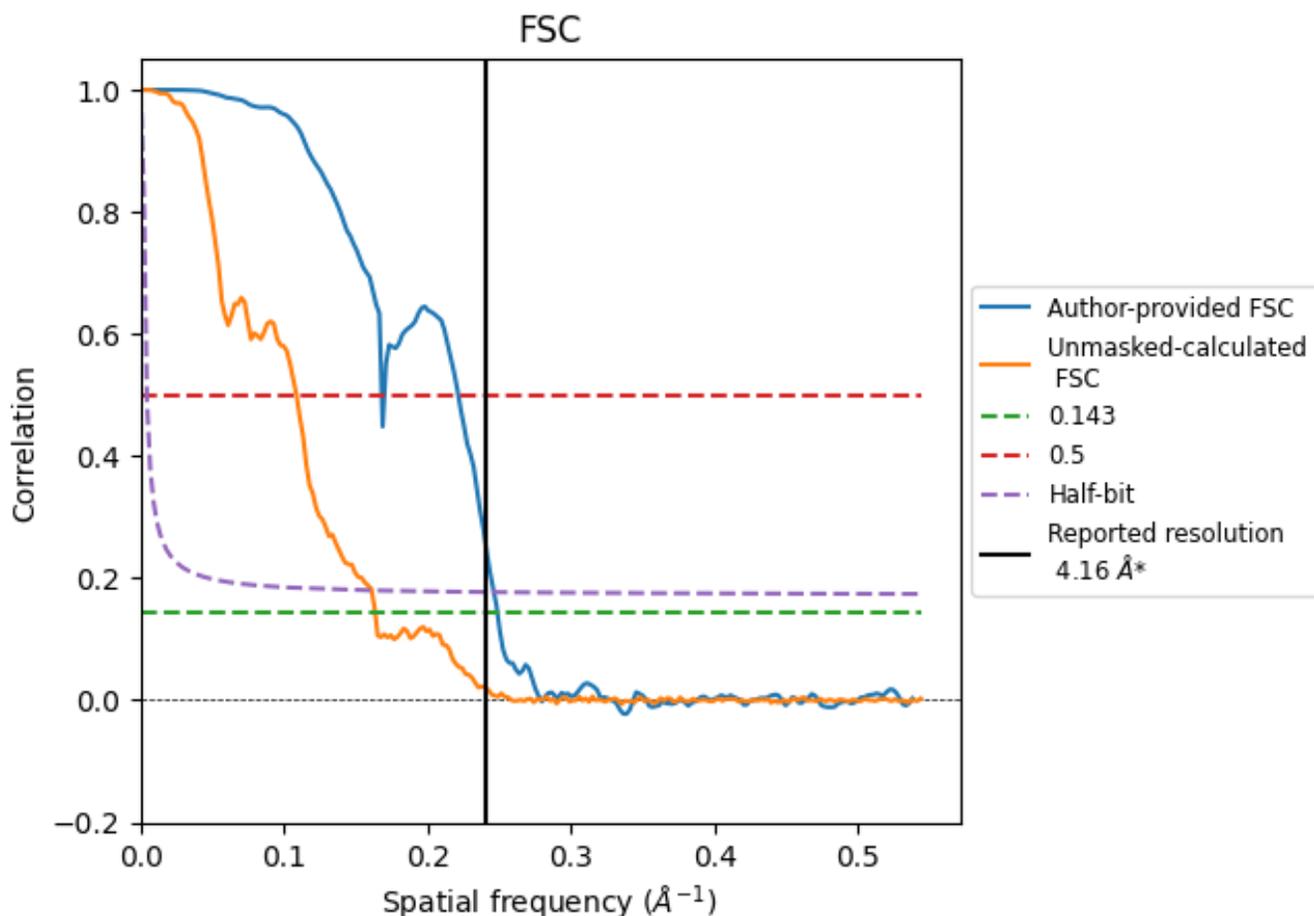
*Reported resolution corresponds to spatial frequency of 0.240 Å^{-1}

8.2　Resolution estimates ⓘ

Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	4.16	-	-
Author-provided FSC curve	4.02	5.95	4.06
Unmasked-calculated*	6.12	9.21	6.21

*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 6.12 differs from the reported value 4.16 by more than 10 %

9   Map-model fit ⓘ

This section contains information regarding the fit between EMDB map EMD-74981 and PDB model 9ZZ6. Per-residue inclusion information can be found in section 3 on page 7.

9.1   Map-model overlay ⓘ


| X | Y | Z |
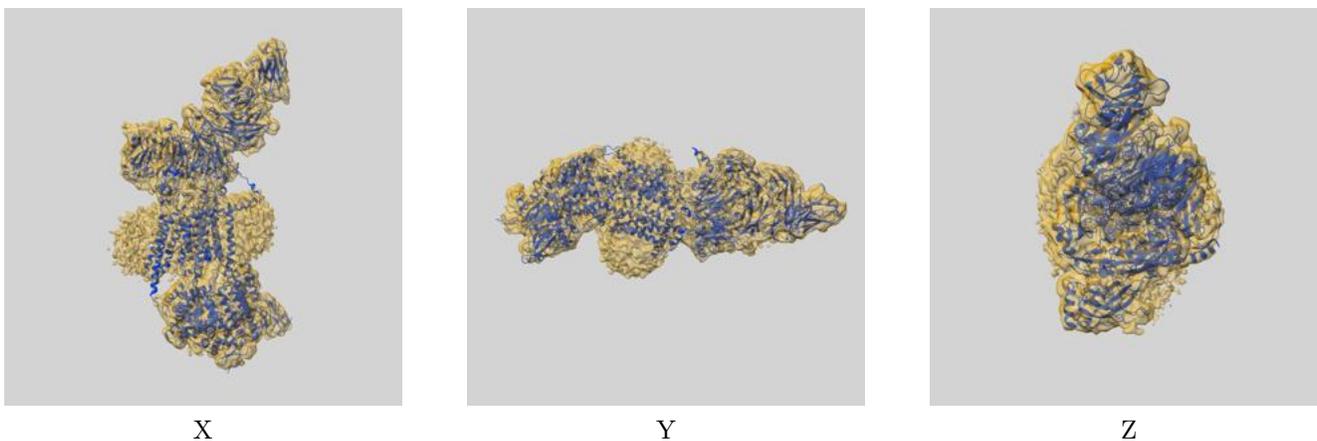
The images above show the 3D surface view of the map at the recommended contour level 0.025 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

9.2   Q-score mapped to coordinate model ⓘ
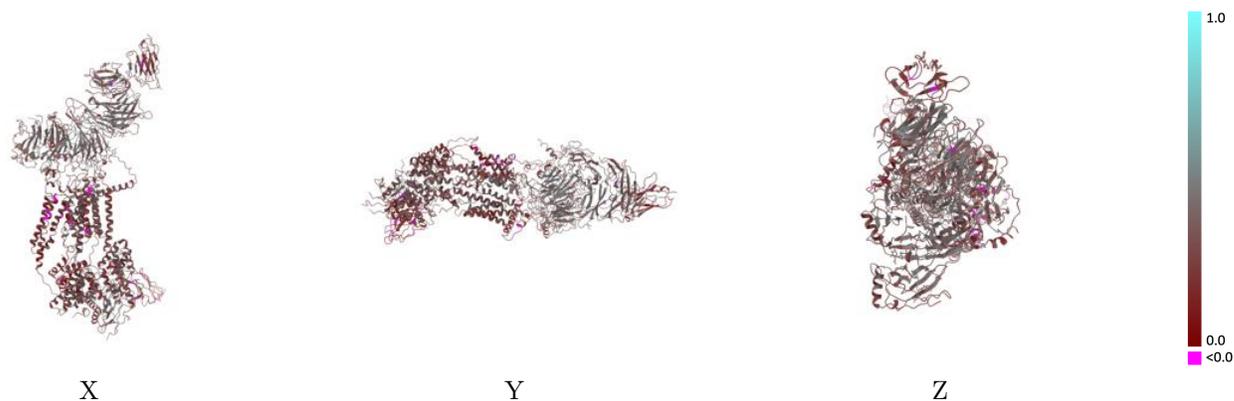
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 ⓘ
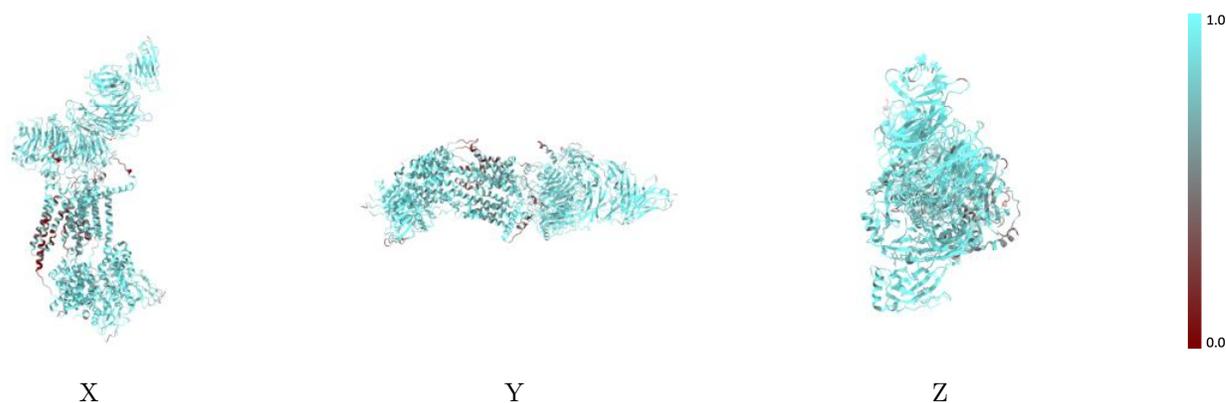
The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.025).

9.4 Atom inclusion ⓘ
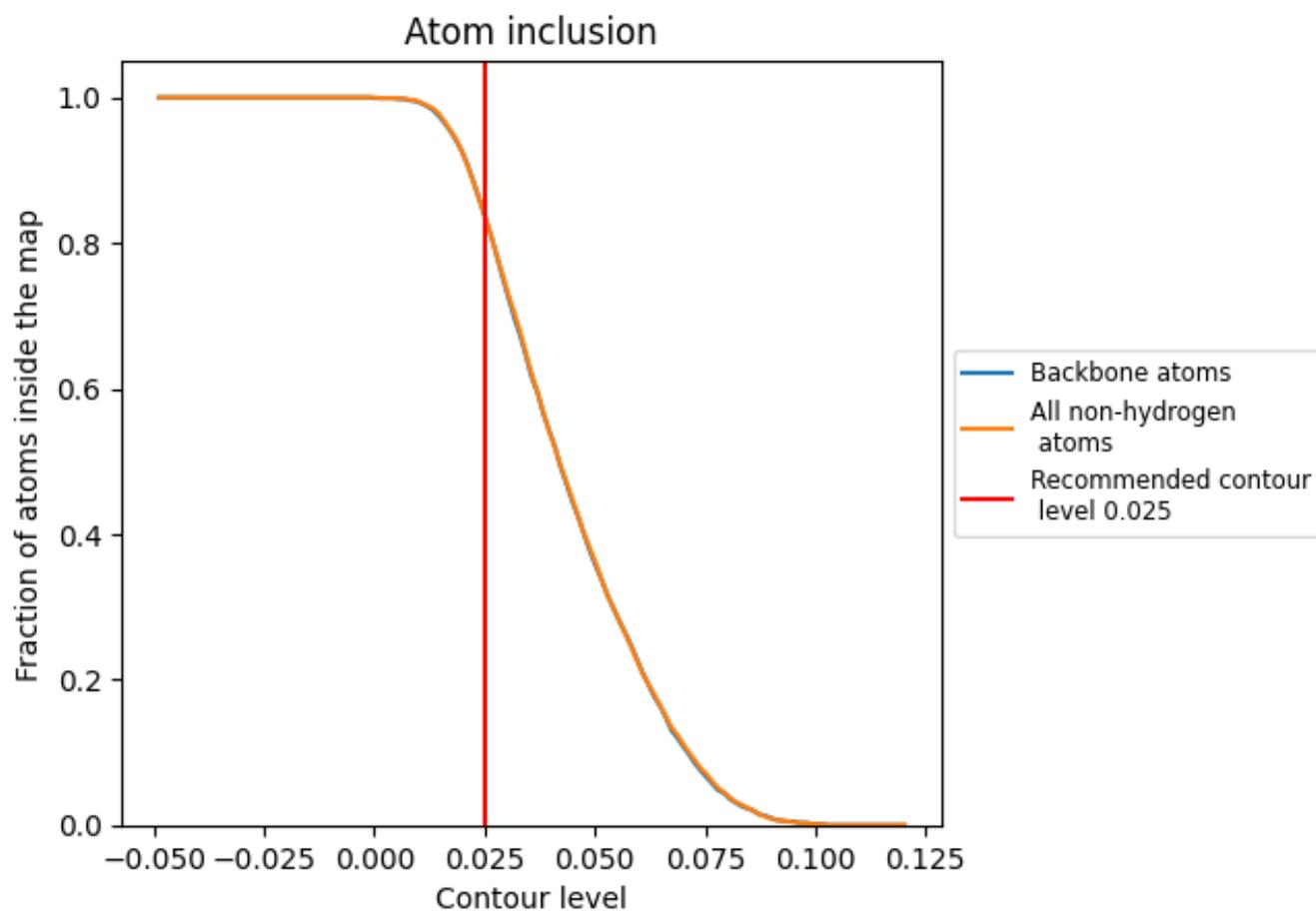
At the recommended contour level, 84% of all backbone atoms, 84% of all non-hydrogen atoms, are inside the map.

9.5   Map-model fit summary (i)

The table lists the average atom inclusion at the recommended contour level (0.025) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.8390	0.3230
A	0.8840	0.3660
B	0.8680	0.3000
C	0.7590	0.2770
D	0.6350	0.2530
E	0.8200	0.3090
F	0.8500	0.3470
G	0.7390	0.3400
H	0.9040	0.3330
I	0.8920	0.3350
J	0.8210	0.3390
K	0.8070	0.2080
L	0.9170	0.2760
M	0.7500	0.3900
N	0.6790	0.3630

1.0

0.0
<0.0