wwPDB EM Validation Summary Report (i)

Jun 21, 2023 – 12:29 PM EDT

PDB ID	:	8DER
EMDB ID	:	EMD-27396
Title	:	Cryo-EM local refinement of antibody SKV16 in complex with VEEV alphavirus spike glycoprotein
Authors	:	Casner, R.G.; Verardi, R.; Roederer, M.; Shapiro, L.
Deposited on	:	2022-06-21
Resolution	:	3.30 Å(reported)

This is a wwPDB EM Validation Summary Report for a publicly released PDB entry.

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/EMValidationReportHelp
with specific help available everywhere you see the (i) symbol.

The types of validation reports are described at
http://www.wwpdb.org/validation/2017/FAQs#types.

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

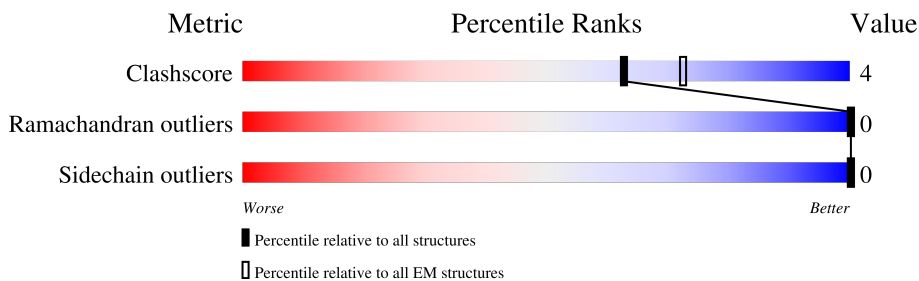|		
EMDB validation analysis	:	0.0.1.dev50
Mogul	:	1.8.5 (274361), CSD as541be (2020)
MolProbity	:	4.02b-467
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ	:	1.9.9
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.33

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 3.30 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.
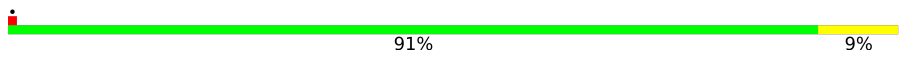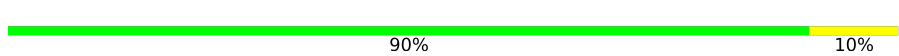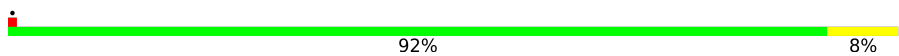
Metric	Percentile Ranks	Value
Clashscore		4
Ramachandran outliers		0
Sidechain outliers		0

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	H	122	7% / 89% / 11%
1	W	122	7% / 93% / 7%
1	X	122	6% / 95% / 5%
2	L	105	10% / 96% / ·
2	V	105	14% / 95% / 5%
2	Y	105	8% / 90% / 10%
3	E	402	· / 92% / 8%
3	F	402	87% / 13%

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Mol	Chain	Length	Quality of chain
3	G	402	91% 9%
4	A	345	84% 16%
4	B	345	90% 10%
4	C	345	92% 8%
5	D	2	50% 50%
5	I	2	100%
6	J	3	33% 100%

2 Entry composition ⓘ

There are 7 unique types of molecules in this entry. The entry contains 22665 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 SKV16 Fab Heavy Chain.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	X	122	Total	C	N	O	S	0	0
			949	596	174	175	4		
1	H	122	Total	C	N	O	S	0	0
			949	596	174	175	4		
1	W	122	Total	C	N	O	S	0	0
			949	596	174	175	4		

- Molecule 2 is a protein called SKV16 Fab Light Chain.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	Y	105	Total	C	N	O	S	0	0
			788	486	141	158	3		
2	L	105	Total	C	N	O	S	0	0
			788	486	141	158	3		
2	V	105	Total	C	N	O	S	0	0
			788	486	141	158	3		

- Molecule 3 is a protein called Spike glycoprotein E1.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	G	402	Total	C	N	O	S	0	0
			3068	1946	506	596	20		
3	E	402	Total	C	N	O	S	0	0
			3068	1946	506	596	20		
3	F	402	Total	C	N	O	S	0	0
			3068	1946	506	596	20		

- Molecule 4 is a protein called Spike glycoprotein E2.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	C	345	Total	C	N	O	S	0	0
			2707	1704	476	509	18		

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Mol	Chain	Residues	Atoms					AltConf	Trace
4	B	345	Total 2707	C 1704	N 476	O 509	S 18	0	0
4	A	344	Total 2699	C 1699	N 475	O 507	S 18	0	0

- Molecule 5 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
5	D	2	Total 28	C 16	N 2	O 10	0	0
5	I	2	Total 28	C 16	N 2	O 10	0	0

- Molecule 6 is an oligosaccharide called beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.
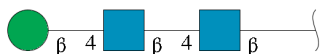
Mol	Chain	Residues	Atoms				AltConf	Trace
6	J	3	Total 39	C 22	N 2	O 15	0	0

- Molecule 7 is 2-acetamido-2-deoxy-beta-D-glucopyranose (three-letter code: NAG) (formula: $C_8H_{15}NO_6$).

Mol	Chain	Residues	Atoms				AltConf
7	G	1	Total 14	C 8	N 1	O 5	0
7	E	1	Total 14	C 8	N 1	O 5	0
7	F	1	Total 14	C 8	N 1	O 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: SKV16 Fab Heavy Chain

Chain X:

- Molecule 1: SKV16 Fab Heavy Chain

Chain H:

- Molecule 1: SKV16 Fab Heavy Chain

Chain W:

- Molecule 2: SKV16 Fab Light Chain

Chain Y:

- Molecule 2: SKV16 Fab Light Chain

Chain L:

• Molecule 2: SKV16 Fab Light Chain

Chain V:

14%

95%   5%

P1 M2 R3 R8 S12 V13 Q17 T18 A19 R20 D26 R52 K66 D82 E83 A84 G101 L104 T105

• Molecule 3: Spike glycoprotein E1

Chain G:

91%   9%

Y1 I13 T17 I18 V47 T48 C49 A59 C68 T71 V80 D97 T98 V103 E120 F156 I161 G182 E183 I184 D202 I203 Q204 S210 S211 D212 L213 Y214 A255 T263 R267 A268 E269 F280 D281 E292 S297 S321

K324 H362 T371 D379 Q392 Y393 H394 V402

• Molecule 3: Spike glycoprotein E1

Chain E:

92%   8%

Y1 A25 K35 L38 Y46 A59 C63 N100 V103 V129 Q130 A131 F132 L133 F156 V159 D202 I203 Q204 I229 G239 Q242 D246 F253 T254 A255 E269 I282 R289 V290 T293 S297 S321 A322 E364

K377 D385 H386 V402

• Molecule 3: Spike glycoprotein E1

Chain F:

87%   13%

Y1 T17 I18 V19 V42 N43 L44 E45 Y46 A59 C78 D97 T98 V103 S104 K105 Y122 V129 I135 I142 V143 T144 V148 V154 N155 F156 V159 K160 I161 Q179 I184 D202 I203 I229 H230 V231 Q242 W243 D246 K247

T263 I266 I282 P283 D284 S310 A322 C328 V332 L339 V344 E345 L346 T347 G350 S351 A352 T353 I354 A359 L367 C370 T371 S372 Y373 H390 H394 V402

• Molecule 4: Spike glycoprotein E2

Chain C:

92%   8%

S1 Y9 T12 I31 R67 T86 R103 G107 M112 V129 E137 R161 G162 A163 V188 V198 T205 I211 F217 M233 L255 H256 V257 L260 N291 P292 T293 R298 T322 E323 E327 R337 P345

• Molecule 4: Spike glycoprotein E2

Chain B: 90%   10%

S1 F6 T12 R13 C22 E34 Q52 L61 R67 L84 I92 V93 D94 G95 L100 V147 D157 R161 M167 E173 V174 D175 S176 S177 D192 G193 E201 T205 Q225 S240 D241 L255 H256 V257 L260 L270

T277 S284 T297 T307 F328 P345

• Molecule 4: Spike glycoprotein E2

Chain A: 84%   16%

S1 Y9 T12 L47 Y53 D56 N60 M66 R67 V82 S83 L84 Y85 T86 I92 F99 L100 G107 I110 T111 M112 E113 R120 V129 V134 N160 R161 V165 D175 S176 S177 V188 P191 V198 G204 I207

I211 F217 S218 Q219 R230 L255 H256 V257 V268 I276 T277 V283 S284 L287 T293 I296 T297 R298 D302 E303 T307 T322 E323 E327 W330 R337 A344 PRO

• Molecule 5: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain D: 50%   50%

NAG1 NAG2

• Molecule 5: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain I: 100%

NAG1 NAG2

• Molecule 6: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain J: 33%   100%

NAG1 NAG2 BMA3

4 Experimental information ⓘ

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	1389120	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose $(e^-/\text{Å}^2)$	58	Depositor
Minimum defocus (nm)	800	Depositor
Maximum defocus (nm)	2000	Depositor
Magnification	Not provided	
Image detector	GATAN K3 BIOQUANTUM (6k x 4k)	Depositor
Maximum map value	1.683	Depositor
Minimum map value	-0.002	Depositor
Average map value	0.002	Depositor
Map value standard deviation	0.031	Depositor
Recommended contour level	0.1	Depositor
Map size (Å)	318.72, 318.72, 318.72	wwPDB
Map dimensions	256, 256, 256	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.245, 1.245, 1.245	Depositor

5   Model quality ⓘ

5.1   Standard geometry ⓘ

Bond lengths and bond angles in the following residue types are not validated in this section: BMA, 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	H	0.33	0/973	0.64	0/1315
1	W	0.42	0/973	0.68	0/1315
1	X	0.30	0/973	0.63	0/1315
2	L	0.30	0/806	0.57	0/1094
2	V	0.29	0/806	0.56	0/1094
2	Y	0.30	0/806	0.59	0/1094
3	E	0.32	0/3153	0.54	0/4308
3	F	0.36	0/3153	0.56	0/4308
3	G	0.31	0/3153	0.53	0/4308
4	A	0.33	0/2771	0.59	0/3760
4	B	0.32	0/2780	0.57	0/3772
4	C	0.32	0/2780	0.58	0/3772
All	All	0.33	0/23127	0.58	0/31455

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	H	949	0	910	8	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	W	949	0	910	5	0
1	X	949	0	910	3	0
2	L	788	0	759	3	0
2	V	788	0	759	8	0
2	Y	788	0	759	5	0
3	E	3068	0	2944	18	0
3	F	3068	0	2944	43	0
3	G	3068	0	2944	22	0
4	A	2699	0	2626	45	0
4	B	2707	0	2633	23	0
4	C	2707	0	2633	19	0
5	D	28	0	25	0	0
5	I	28	0	25	0	0
6	J	39	0	34	0	0
7	E	14	0	13	0	0
7	F	14	0	13	0	0
7	G	14	0	13	0	0
All	All	22665	0	21854	194	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 4.

The worst 5 of 194 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)
2:V:2:MET:HE1	2:V:26:ASP:O	1.75	0.86
3:F:339:LEU:HD11	3:F:367:LEU:CD1	2.06	0.85
4:B:297:THR:OG1	4:B:307:THR:OG1	1.97	0.83
3:F:347:THR:CG2	3:F:350:GLY:HA3	2.09	0.82
3:F:339:LEU:HD11	3:F:367:LEU:HD13	1.61	0.81

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	H	120/122 (98%)	111 (92%)	9 (8%)	0	100	100
1	W	120/122 (98%)	109 (91%)	11 (9%)	0	100	100
1	X	120/122 (98%)	108 (90%)	12 (10%)	0	100	100
2	L	103/105 (98%)	103 (100%)	0	0	100	100
2	V	103/105 (98%)	98 (95%)	5 (5%)	0	100	100
2	Y	103/105 (98%)	97 (94%)	6 (6%)	0	100	100
3	E	400/402 (100%)	386 (96%)	14 (4%)	0	100	100
3	F	400/402 (100%)	385 (96%)	15 (4%)	0	100	100
3	G	400/402 (100%)	381 (95%)	19 (5%)	0	100	100
4	A	342/345 (99%)	331 (97%)	11 (3%)	0	100	100
4	B	343/345 (99%)	332 (97%)	11 (3%)	0	100	100
4	C	343/345 (99%)	334 (97%)	9 (3%)	0	100	100
All	All	2897/2922 (99%)	2775 (96%)	122 (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	H	98/98 (100%)	98 (100%)	0	100	100
1	W	98/98 (100%)	98 (100%)	0	100	100
1	X	98/98 (100%)	98 (100%)	0	100	100
2	L	86/86 (100%)	86 (100%)	0	100	100
2	V	86/86 (100%)	86 (100%)	0	100	100
2	Y	86/86 (100%)	86 (100%)	0	100	100
3	E	335/335 (100%)	335 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
3	F	335/335 (100%)	335 (100%)	0	100	100
3	G	335/335 (100%)	335 (100%)	0	100	100
4	A	299/300 (100%)	299 (100%)	0	100	100
4	B	300/300 (100%)	300 (100%)	0	100	100
4	C	300/300 (100%)	300 (100%)	0	100	100
All	All	2456/2457 (100%)	2456 (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. All (4) such sidechains are listed below:

Mol	Chain	Res	Type
2	Y	34	HIS
4	B	288	HIS
4	A	219	GLN
4	A	288	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 ⓘ

7 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	$\#\|Z\| > 2$
5	NAG	D	1	5,4	14,14,15	0.43	0	17,19,21	0.55	0
5	NAG	D	2	5	14,14,15	0.28	0	17,19,21	1.50	2 (11%)
5	NAG	I	1	5,4	14,14,15	0.34	0	17,19,21	0.65	0
5	NAG	I	2	5	14,14,15	0.27	0	17,19,21	0.85	0
6	NAG	J	1	6,4	14,14,15	0.34	0	17,19,21	0.57	0
6	NAG	J	2	6	14,14,15	0.35	0	17,19,21	0.68	0
6	BMA	J	3	6	11,11,12	0.22	0	15,15,17	0.54	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
5	NAG	D	1	5,4	-	4/6/23/26	0/1/1/1
5	NAG	D	2	5	-	5/6/23/26	0/1/1/1
5	NAG	I	1	5,4	-	2/6/23/26	0/1/1/1
5	NAG	I	2	5	-	3/6/23/26	0/1/1/1
6	NAG	J	1	6,4	-	2/6/23/26	0/1/1/1
6	NAG	J	2	6	-	0/6/23/26	0/1/1/1
6	BMA	J	3	6	-	1/2/19/22	0/1/1/1

There are no bond length outliers.

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
5	D	2	NAG	C2-N2-C7	4.06	128.68	122.90
5	D	2	NAG	C1-O5-C5	2.39	115.42	112.19

There are no chirality outliers.

5 of 17 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	D	2	NAG	O5-C5-C6-O6
5	I	1	NAG	C8-C7-N2-C2
5	D	2	NAG	C4-C5-C6-O6
5	D	1	NAG	C8-C7-N2-C2
5	I	1	NAG	O7-C7-N2-C2

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 oligosaccharide.

Oligosaccharide Chain D

Bond lengths | Bond angles

Torsions | Rings

Oligosaccharide Chain I

Bond lengths

Bond angles

Torsions

Rings

Oligosaccharide Chain J

Bond lengths	Bond angles
Torsions	Rings
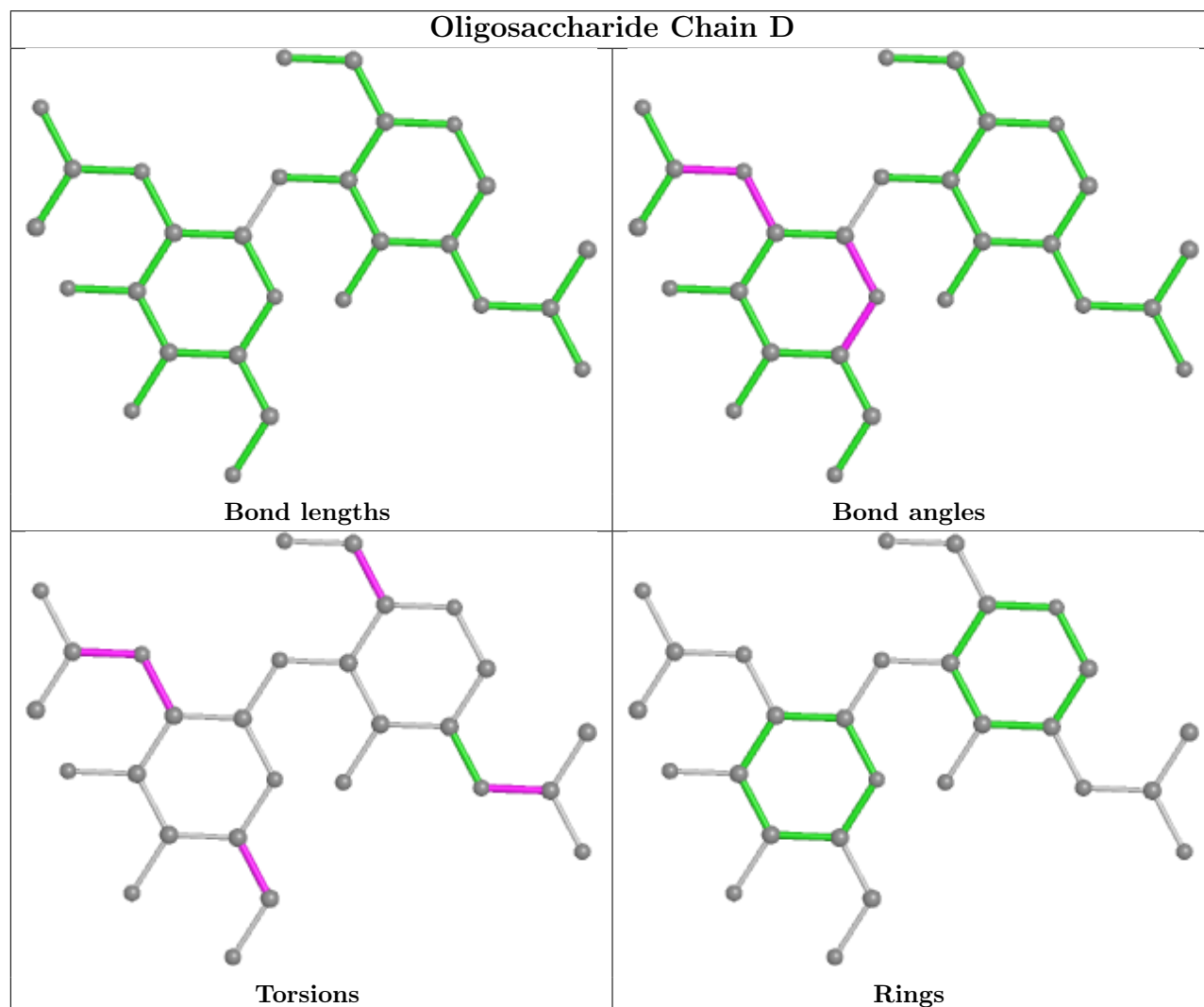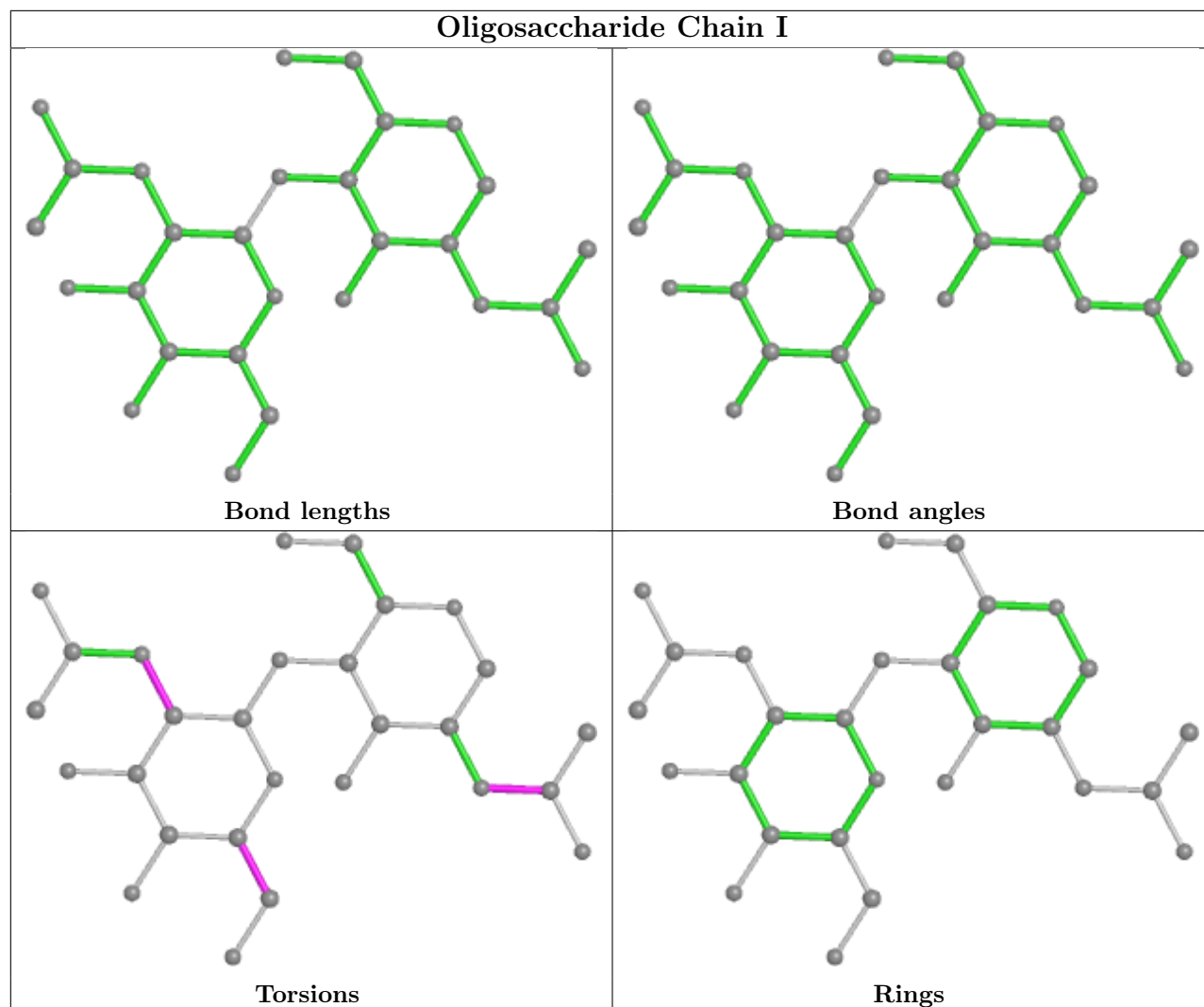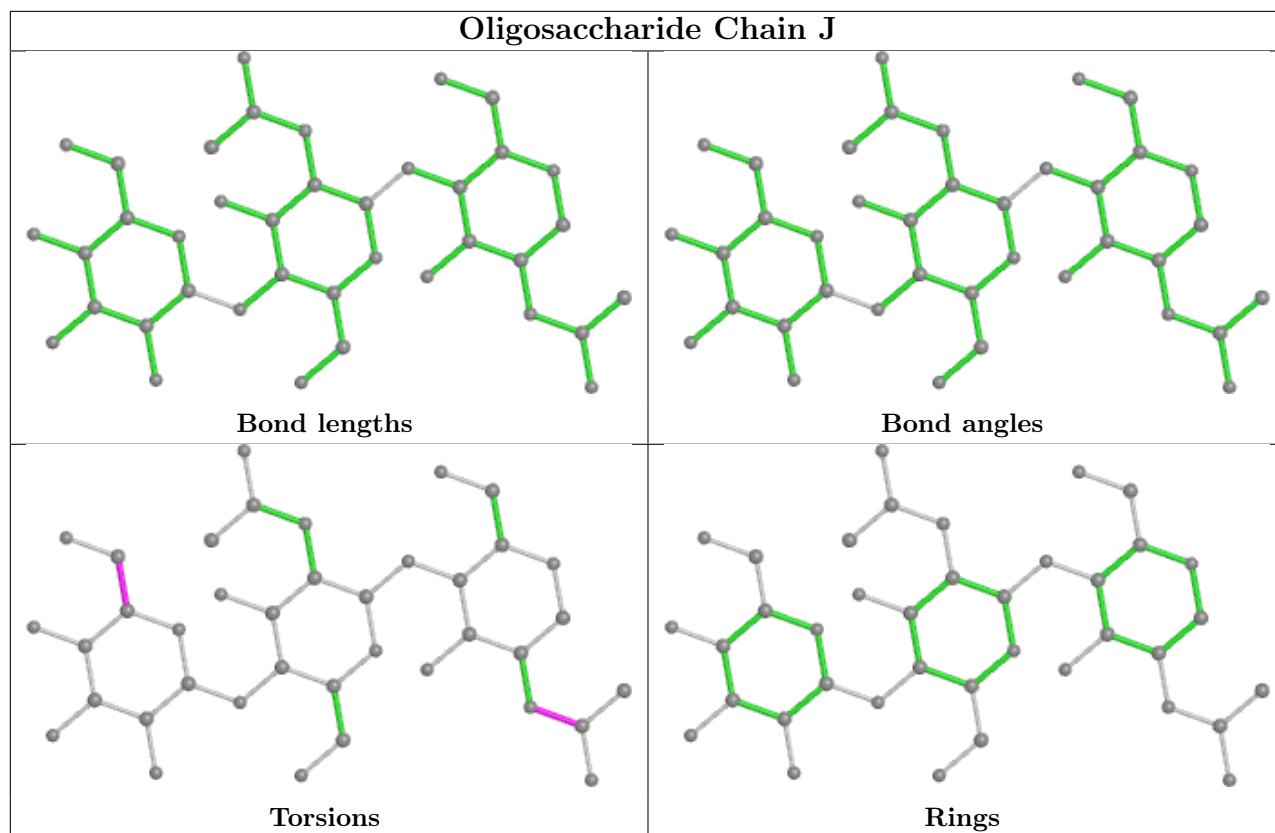
5.6 Ligand geometry (i)

3 ligands 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	$\#|Z| > 2$
7	NAG	F	501	3	14,14,15	0.30	0	17,19,21	0.67	0
7	NAG	G	501	3	14,14,15	0.29	0	17,19,21	0.75	0
7	NAG	E	501	3	14,14,15	0.26	0	17,19,21	0.63	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
7	NAG	F	501	3	-	0/6/23/26	0/1/1/1
7	NAG	G	501	3	-	3/6/23/26	0/1/1/1
7	NAG	E	501	3	-	2/6/23/26	0/1/1/1

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (5) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
7	G	501	NAG	C8-C7-N2-C2
7	G	501	NAG	O7-C7-N2-C2
7	E	501	NAG	C8-C7-N2-C2
7	E	501	NAG	O7-C7-N2-C2
7	G	501	NAG	O5-C5-C6-O6

There are no ring outliers.

No monomer is involved in short contacts.

5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

6   Map visualisation ⓘ

This section contains visualisations of the EMDB entry EMD-27396. 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 ⓘ
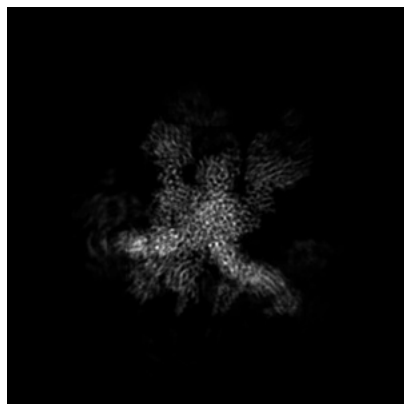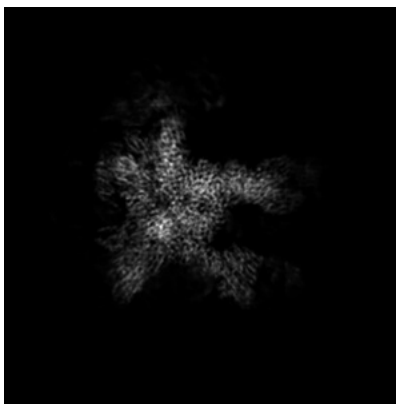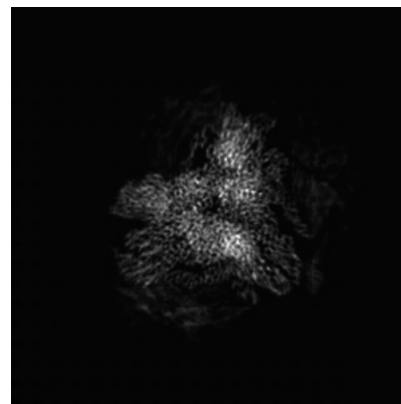
6.1.1   Primary map

X   Y   Z

6.1.2   Raw map

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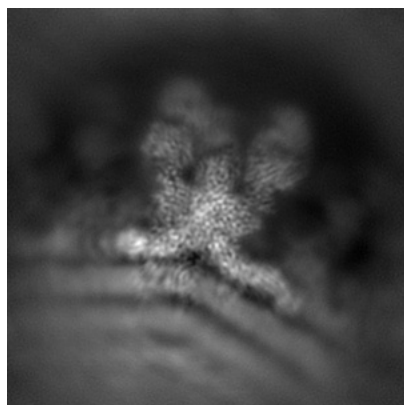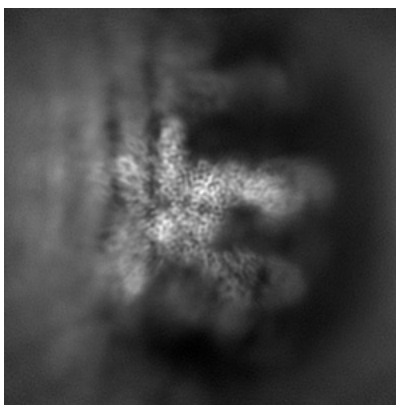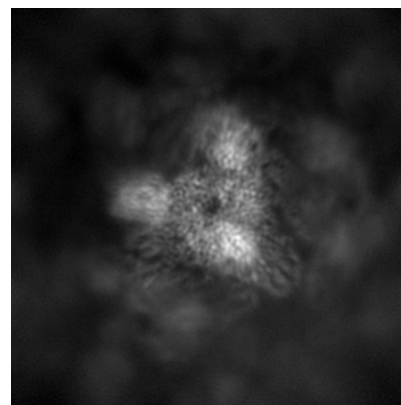
The images above show the map projected in three orthogonal directions.

6.2   Central slices ⓘ
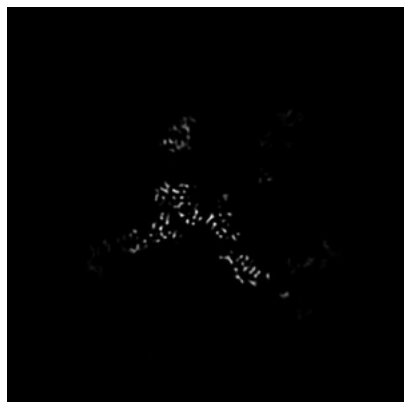
6.2.1   Primary map
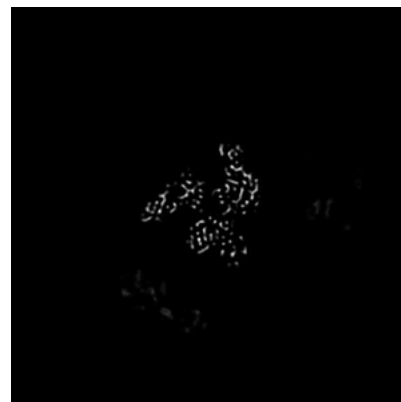
X Index: 128   Y Index: 128   Z Index: 128

6.2.2   Raw map
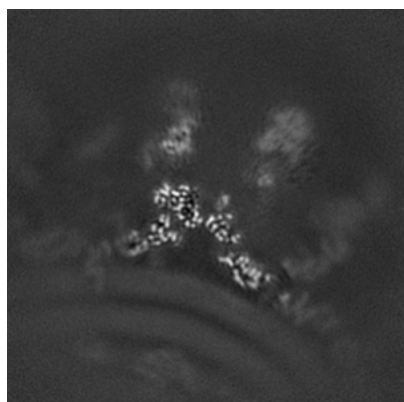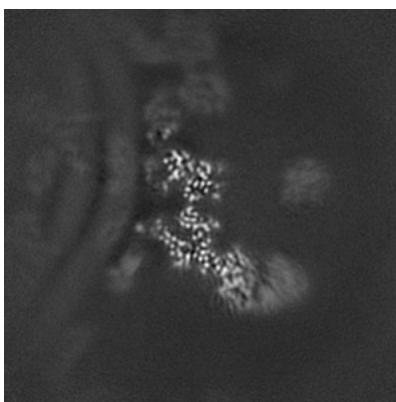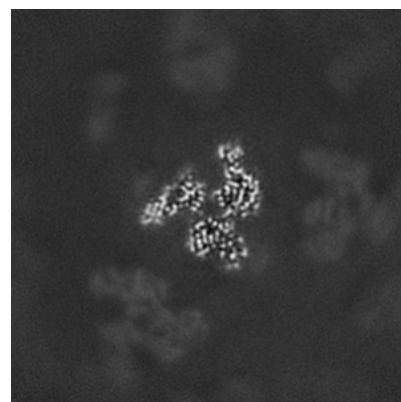
X Index: 128   Y Index: 128   Z Index: 128

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: 145 | Y Index: 138 | Z Index: 101 |

6.3.2 Raw map
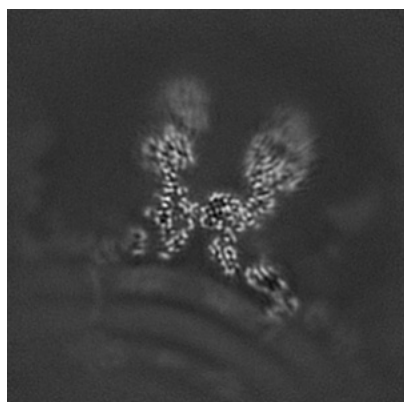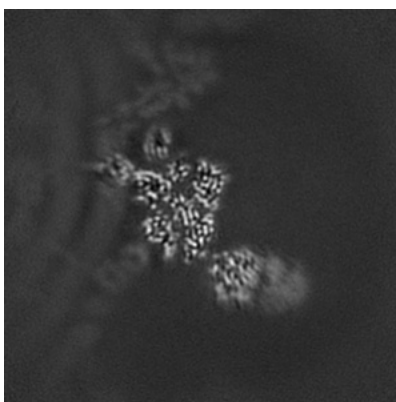
| X Index: 138 | Y Index: 138 | Z Index: 108 |
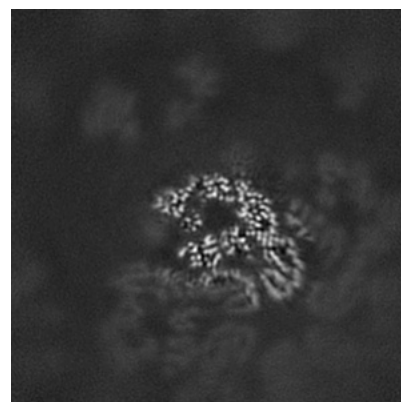
The images above show the largest variance slices of the map in three orthogonal directions.

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

6.4.1 Primary map
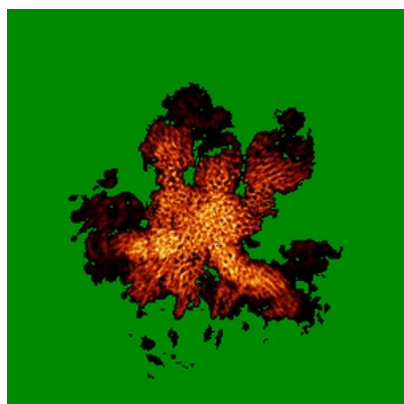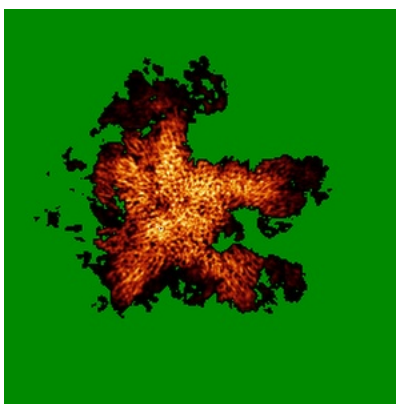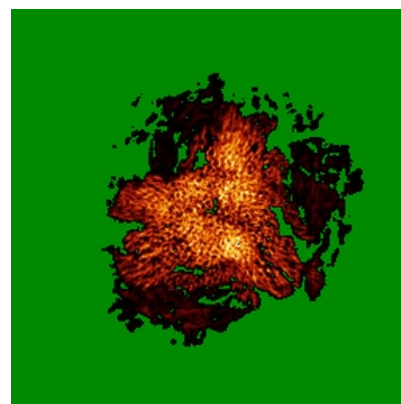
X Y Z

6.4.2 Raw map

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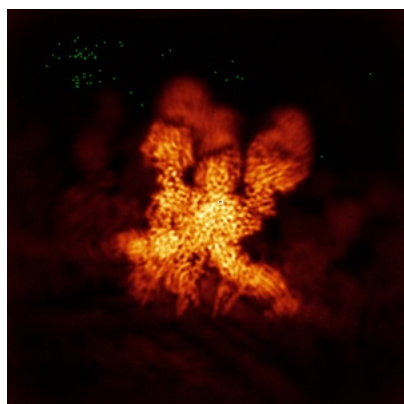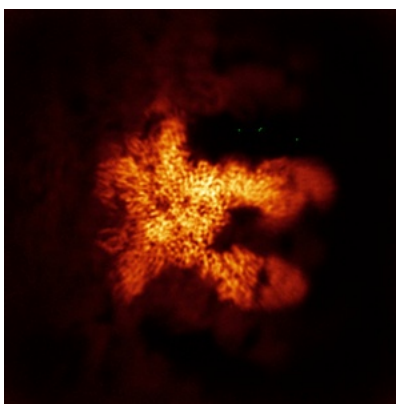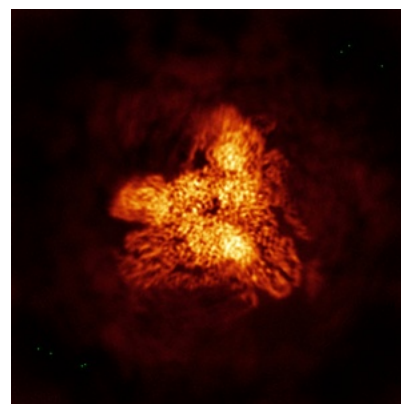
The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

6.5 Orthogonal surface views (i)

6.5.1 Primary map

| X | Y | Z |
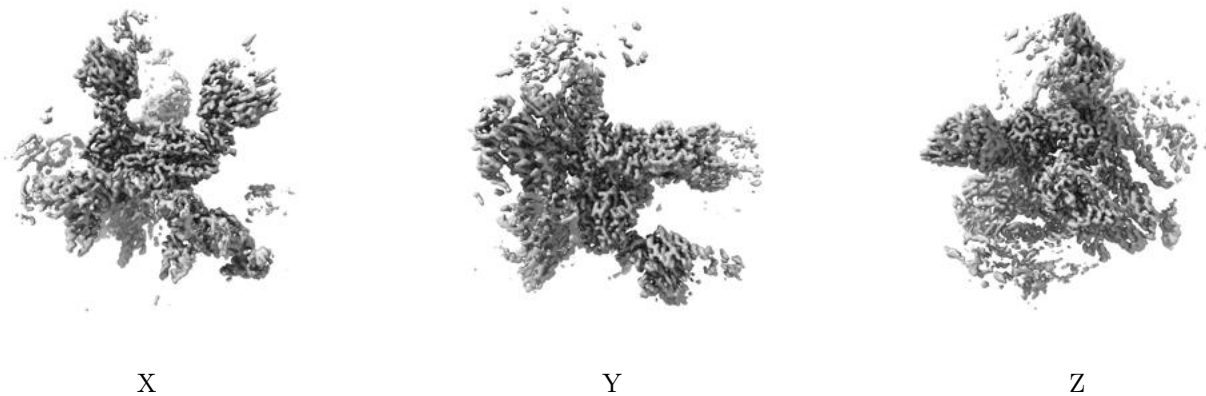
The images above show the 3D surface view of the map at the recommended contour level 0.1. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map

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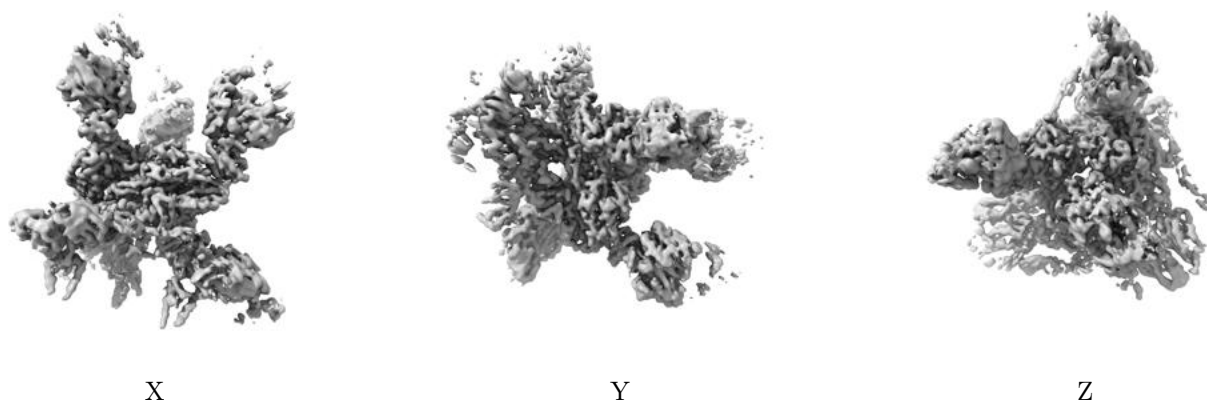
These images show the 3D surface of the raw map. The raw map's contour level was selected so that its surface encloses the same volume as the primary map does at its recommended contour level.

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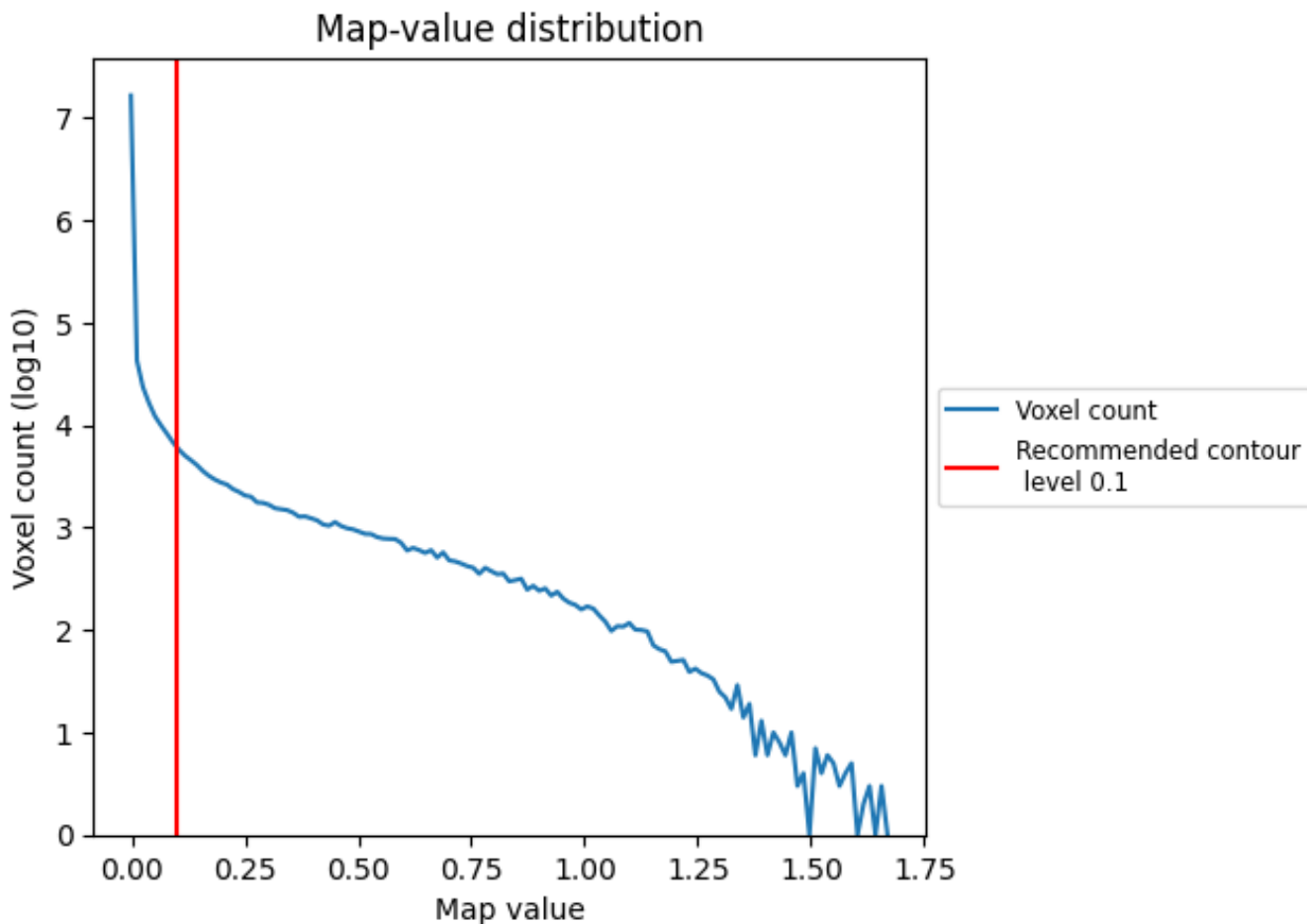
The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

7.2   Volume estimate ⓘ
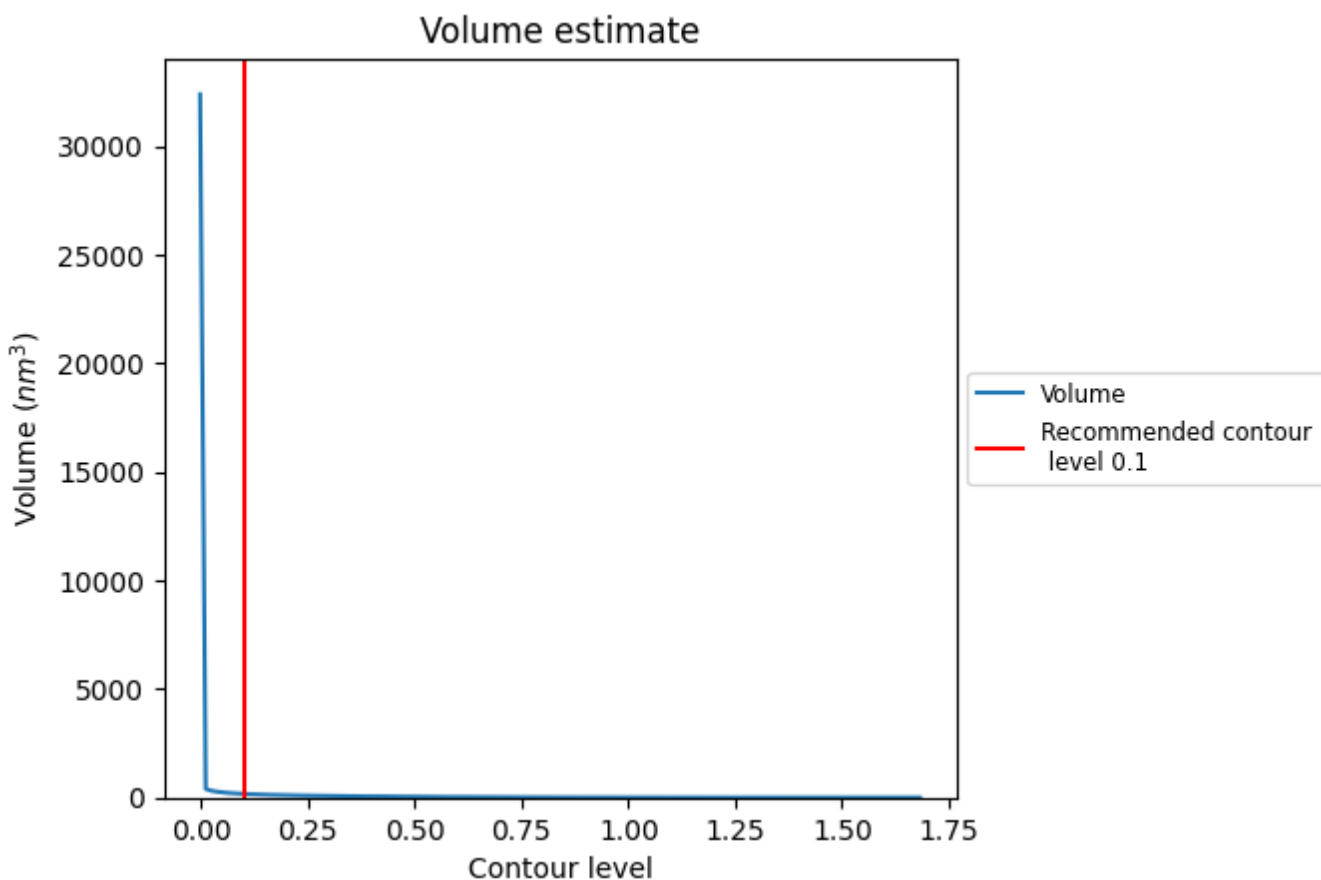
The volume at the recommended contour level is 169 nm^3; this corresponds to an approximate mass of 153 kDa.

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   ⓘ
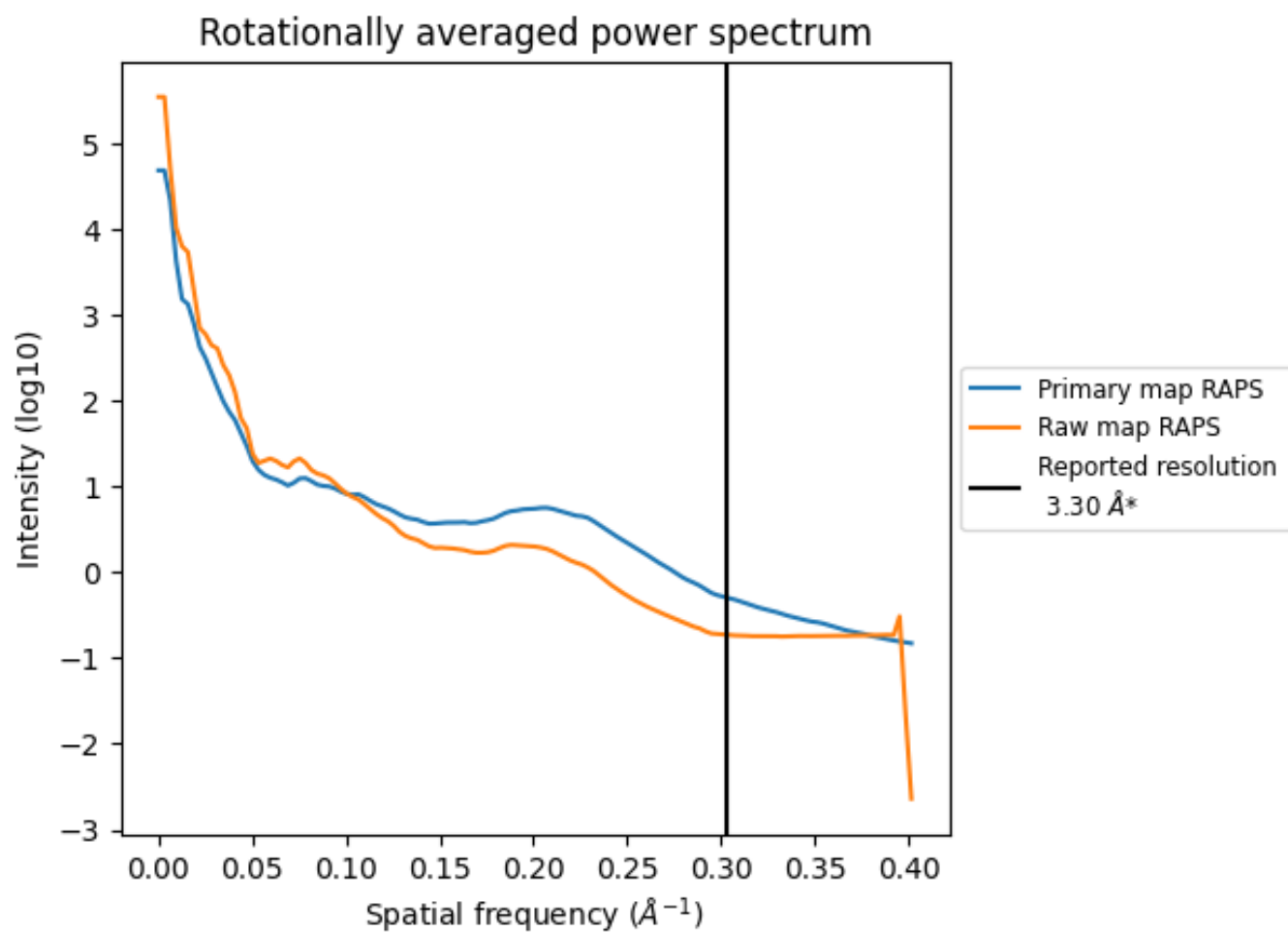
*Reported resolution corresponds to spatial frequency of 0.303 Å^{-1}

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 ⓘ
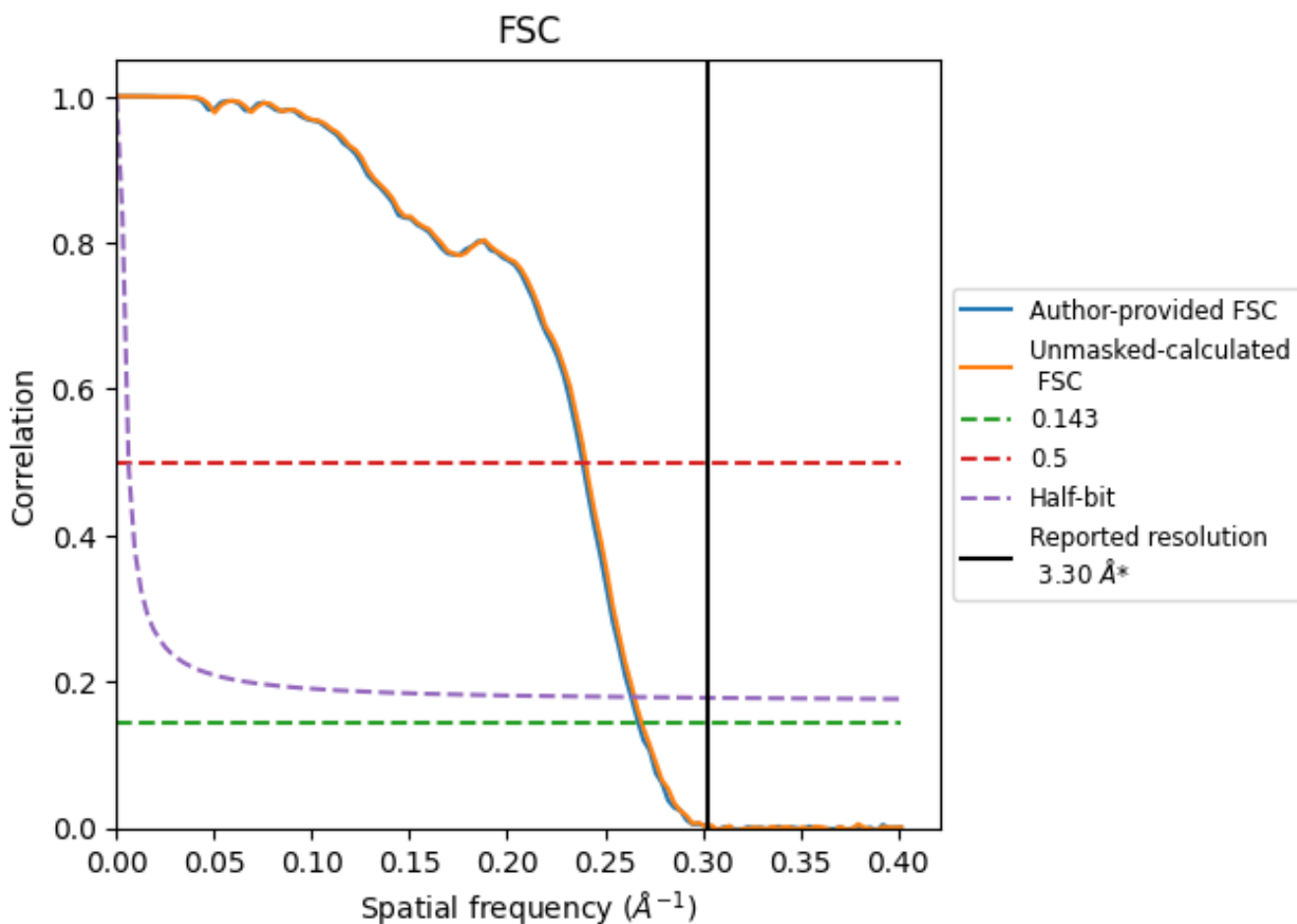
*Reported resolution corresponds to spatial frequency of 0.303 Å^{-1}

8.2 Resolution estimates ⓘ

Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.30	-	-
Author-provided FSC curve	3.74	4.19	3.80
Unmasked-calculated*	3.72	4.16	3.77

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from author-provided FSC intersecting FSC 0.143 CUT-OFF 3.74 differs from the reported value 3.3 by more than 10 %

The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 3.72 differs from the reported value 3.3 by more than 10 %

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9 Map-model fit ⓘ

This section contains information regarding the fit between EMDB map EMD-27396 and PDB model 8DER. Per-residue inclusion information can be found in section 3 on page 7.

9.1 Map-model overlay ⓘ

X   Y   Z
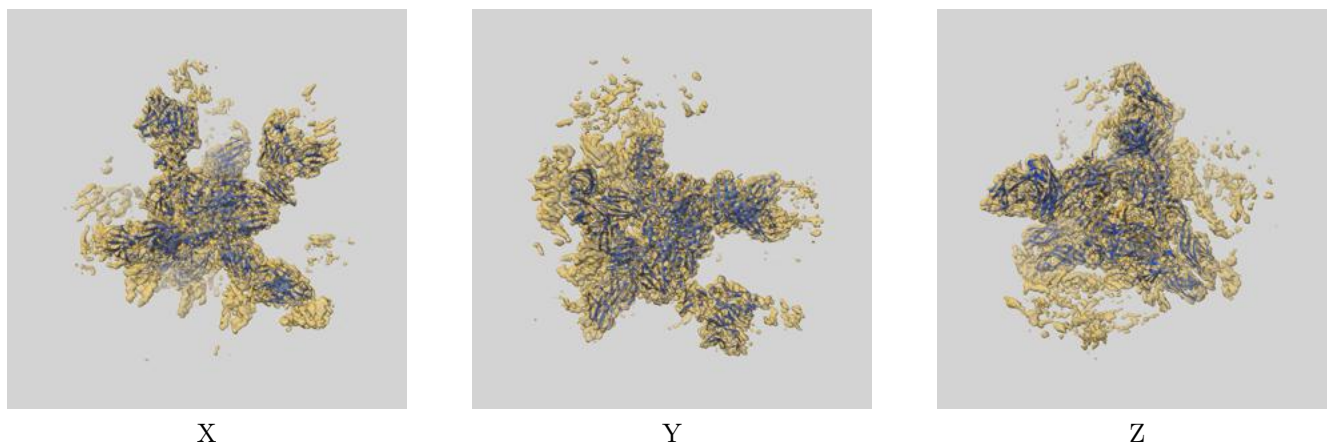
The images above show the 3D surface view of the map at the recommended contour level 0.1 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

9.2   Q-score mapped to coordinate model ⓘ

X	Y	Z
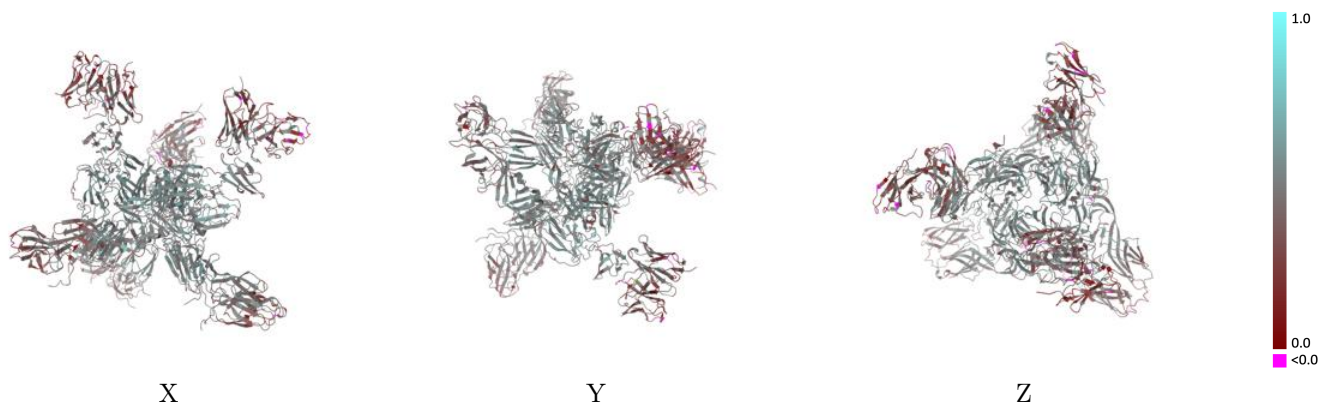
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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
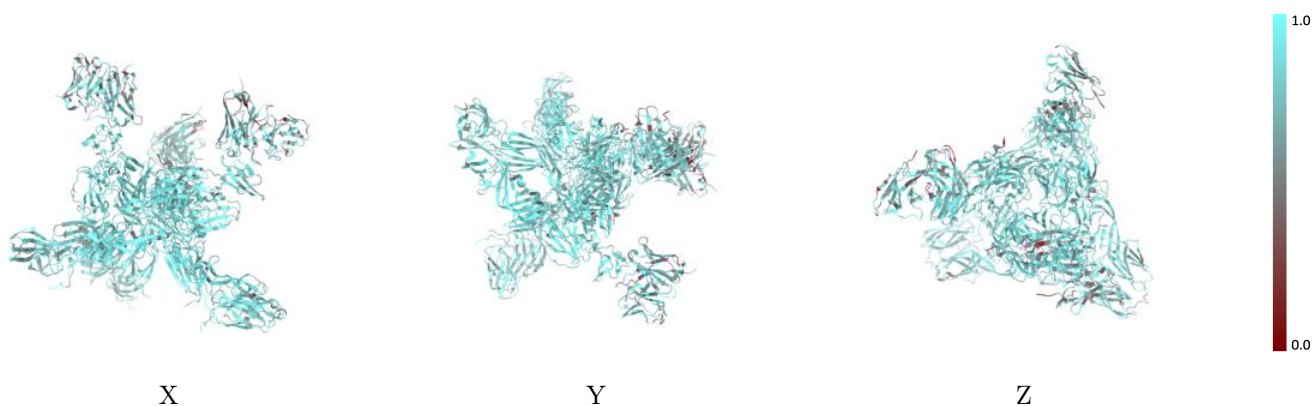
The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.1).

9.4 Atom inclusion ⓘ
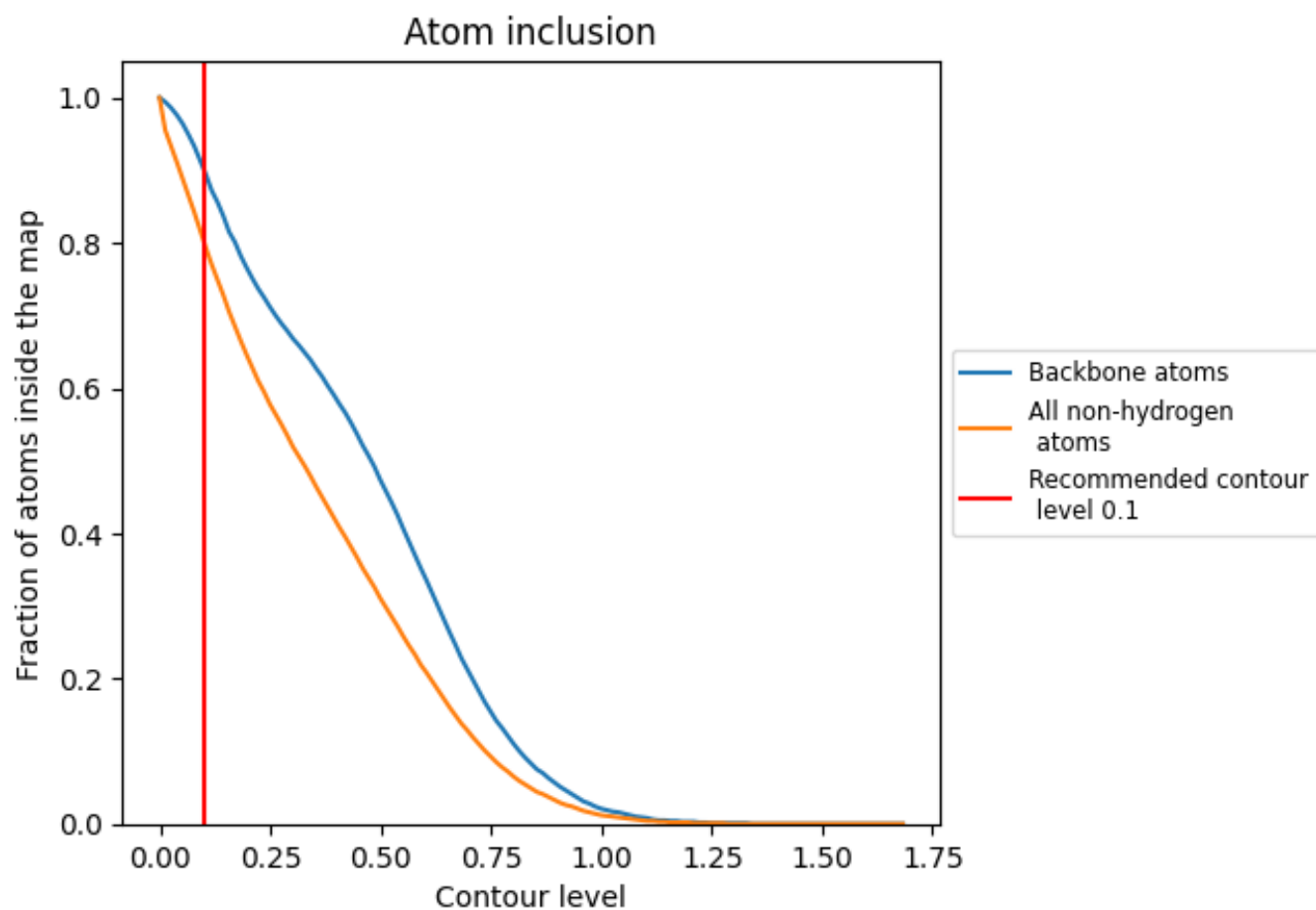
At the recommended contour level, 90% of all backbone atoms, 80% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary ⓘ

The table lists the average atom inclusion at the recommended contour level (0.1) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.7990	0.4430
A	0.8370	0.4990
B	0.8590	0.5040
C	0.8460	0.5080
D	0.6790	0.3330
E	0.8010	0.4430
F	0.8240	0.4540
G	0.8040	0.4450
H	0.7190	0.3600
I	0.7500	0.4460
J	0.6150	0.3370
L	0.6760	0.2980
V	0.6670	0.3000
W	0.7190	0.3680
X	0.7380	0.3810
Y	0.7080	0.3210

1.0

0.0
<0.0