



wwPDB EM Validation Summary Report ⓘ

Mar 9, 2026 – 02:28 PM UTC

PDB ID : 9DBE / pdb_00009dbe
EMDB ID : EMD-46716
Title : Molecular basis of pathogenicity of the recently emerged FCoV-23 coronavirus.
FCoV-23 S long domain 0 in swung-out conformation (local refinement)
Authors : Tortorici, M.A.; Veesler, D.; Seattle Structural Genomics Center for Infectious
Disease (SSGCID)
Deposited on : 2024-08-23
Resolution : 2.40 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 ⓘ 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 ⓘ](#)) were used in the production of this report:

EMDB validation analysis : 0.0.1.dev132
Mogul : 2022.3.0, CSD as543be (2022)
MolProbity : 4-5-2 with Phenix2.0
Buster-report : wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)
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) : 2.49

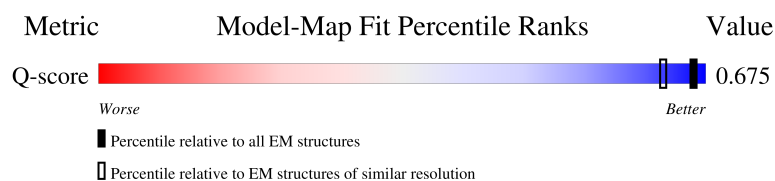
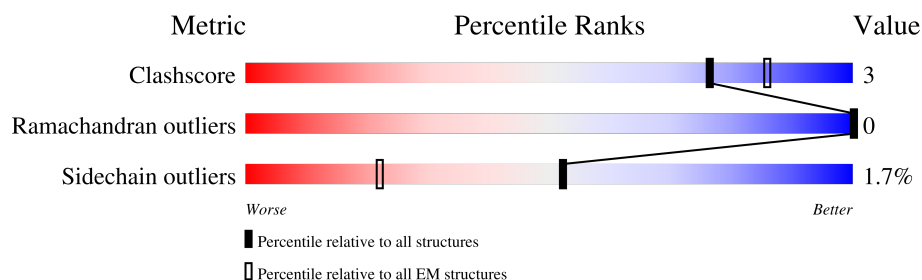
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 2.40 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	Whole archive (#Entries)	EM structures (#Entries)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	229148	23984	-
Ramachandran outliers	224038	23583	-
Sidechain outliers	223484	23102	-
Q-score	-	25397	5628 (1.90 - 2.90)

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 $\leq 5\%$. 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	1473	 15% 83%
2	B	2	 100% 100%
2	C	2	 50% 50% 50%
2	D	2	 100% 50% 50%

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Mol	Chain	Length	Quality of chain
2	G	2	<div><div></div><div>50%</div><div></div><div></div><div>100%</div><div></div></div>
3	E	3	<div><div></div><div>100%</div><div></div><div></div><div>67%</div><div></div><div>33%</div><div></div></div>
3	F	3	<div><div></div><div>67%</div><div></div><div>33%</div><div></div><div>67%</div><div></div></div>

2 Entry composition [i](#)

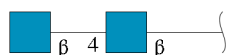
There are 5 unique types of molecules in this entry. The entry contains 2150 atoms, of which 0 are hydrogens and 0 are deuteriums.

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 FCoV-23 S long domain 0 in swung-out conformation (local refinement).

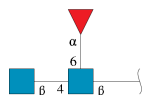
Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	245	Total	C	N	O	S	0	0
			1920	1232	323	356	9		

- Molecule 2 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
2	B	2	Total	C	N	O	0	0
			28	16	2	10		
2	C	2	Total	C	N	O	0	0
			28	16	2	10		
2	D	2	Total	C	N	O	0	0
			28	16	2	10		
2	G	2	Total	C	N	O	0	0
			28	16	2	10		

- Molecule 3 is an oligosaccharide called 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-[alpha-L-fucopyranose-(1-6)]2-acetamido-2-deoxy-beta-D-glucopyranose.



Mol	Chain	Residues	Atoms				AltConf	Trace
3	E	3	Total	C	N	O	0	0
			38	22	2	14		
3	F	3	Total	C	N	O	0	0
			38	22	2	14		

- Molecule 4 is 2-acetamido-2-deoxy-beta-D-glucopyranose (CCD ID: NAG) (formula: $C_8H_{15}NO_6$) (labeled as "Ligand of Interest" by depositor).



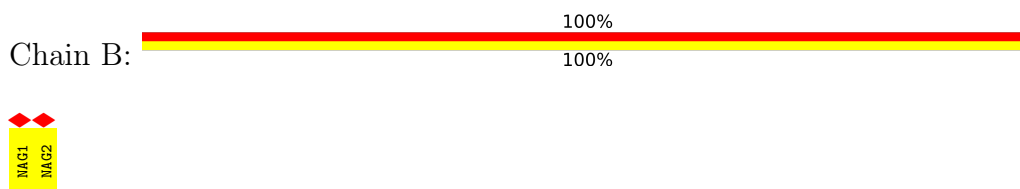
Mol	Chain	Residues	Atoms				AltConf
4	A	1	Total	C	N	O	0
			14	8	1	5	

- Molecule 5 is water.

Mol	Chain	Residues	Atoms		AltConf
5	A	28	Total	O	0
			28	28	

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

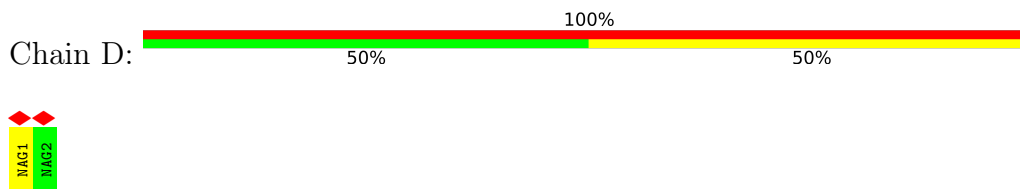
- Molecule 2: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



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



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



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



- Molecule 3: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-[alpha-L-fucopyranose-(1-6)]2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 3: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-[alpha-L-fucopyranose-(1-6)]2-acetamido-2-deoxy-beta-D-glucopyranose



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	539331	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 ($e^-/\text{\AA}^2$)	60	Depositor
Minimum defocus (nm)	800	Depositor
Maximum defocus (nm)	2500	Depositor
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	6.479	Depositor
Minimum map value	-4.596	Depositor
Average map value	-0.000	Depositor
Map value standard deviation	0.060	Depositor
Recommended contour level	1.37	Depositor
Map size (\AA)	515.8912, 515.8912, 515.8912	wwPDB
Map dimensions	512, 512, 512	wwPDB
Map angles ($^\circ$)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (\AA)	1.0076, 1.0076, 1.0076	Depositor

5 Model quality [i](#)

5.1 Standard geometry [i](#)

Bond lengths and bond angles in the following residue types are not validated in this section: FUC, 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	0.14	0/1975	0.34	0/2700

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts [i](#)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	1920	0	1754	12	0
2	B	28	0	25	0	0
2	C	28	0	25	0	0
2	D	28	0	25	0	0
2	G	28	0	25	0	0
3	E	38	0	34	0	0
3	F	38	0	34	0	0
4	A	14	0	13	0	0
5	A	28	0	0	0	0
All	All	2150	0	1935	12	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 3.

The worst 5 of 12 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:121:SER:HB2	1:A:130:ARG:HH21	1.63	0.63
1:A:104:PRO:HA	1:A:120:ILE:O	2.01	0.61
1:A:171:VAL:O	1:A:173:PRO:HD3	2.07	0.54
1:A:170:SER:OG	1:A:171:VAL:O	2.26	0.52
1:A:55:VAL:HG21	1:A:261:THR:HG22	1.93	0.51

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	243/1473 (16%)	235 (97%)	8 (3%)	0	100	100

There are no Ramachandran outliers to report.

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	179/1273 (14%)	176 (98%)	3 (2%)	53	74

All (3) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	114	VAL
1	A	121	SER
1	A	231	TYR

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	157	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 ⓘ

14 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	$\# Z > 2$
2	NAG	B	1	2,1	14,14,15	0.70	0	17,19,21	0.87	1 (5%)
2	NAG	B	2	2	14,14,15	0.74	0	17,19,21	0.97	1 (5%)
2	NAG	C	1	2,1	14,14,15	0.76	0	17,19,21	0.86	0
2	NAG	C	2	2	14,14,15	0.73	0	17,19,21	0.94	1 (5%)
2	NAG	D	1	2,1	14,14,15	0.77	0	17,19,21	1.01	1 (5%)
2	NAG	D	2	2	14,14,15	0.73	0	17,19,21	0.85	0
3	NAG	E	1	3,1	14,14,15	0.79	0	17,19,21	1.24	1 (5%)
3	NAG	E	2	3	14,14,15	0.71	0	17,19,21	0.83	0
3	FUC	E	3	3	10,10,11	0.78	0	14,14,16	0.93	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
3	NAG	F	1	3,1	14,14,15	0.75	0	17,19,21	1.01	1 (5%)
3	NAG	F	2	3	14,14,15	0.73	0	17,19,21	0.88	1 (5%)
3	FUC	F	3	3	10,10,11	0.83	0	14,14,16	0.93	0
2	NAG	G	1	2,1	14,14,15	0.77	0	17,19,21	1.29	3 (17%)
2	NAG	G	2	2	14,14,15	0.71	0	17,19,21	0.94	1 (5%)

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
2	NAG	B	1	2,1	-	2/6/23/26	0/1/1/1
2	NAG	B	2	2	-	4/6/23/26	0/1/1/1
2	NAG	C	1	2,1	-	0/6/23/26	0/1/1/1
2	NAG	C	2	2	-	2/6/23/26	0/1/1/1
2	NAG	D	1	2,1	-	0/6/23/26	0/1/1/1
2	NAG	D	2	2	-	2/6/23/26	0/1/1/1
3	NAG	E	1	3,1	-	4/6/23/26	0/1/1/1
3	NAG	E	2	3	-	0/6/23/26	0/1/1/1
3	FUC	E	3	3	-	-	0/1/1/1
3	NAG	F	1	3,1	-	2/6/23/26	0/1/1/1
3	NAG	F	2	3	-	3/6/23/26	0/1/1/1
3	FUC	F	3	3	-	-	0/1/1/1
2	NAG	G	1	2,1	-	2/6/23/26	0/1/1/1
2	NAG	G	2	2	-	0/6/23/26	0/1/1/1

There are no bond length outliers.

The worst 5 of 11 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	E	1	NAG	C2-N2-C7	2.91	126.80	122.90
2	G	1	NAG	C2-N2-C7	2.88	126.76	122.90
2	C	2	NAG	C2-N2-C7	2.50	126.25	122.90
2	B	2	NAG	C2-N2-C7	2.43	126.16	122.90
2	D	1	NAG	O5-C1-C2	-2.43	107.53	111.29

There are no chirality outliers.

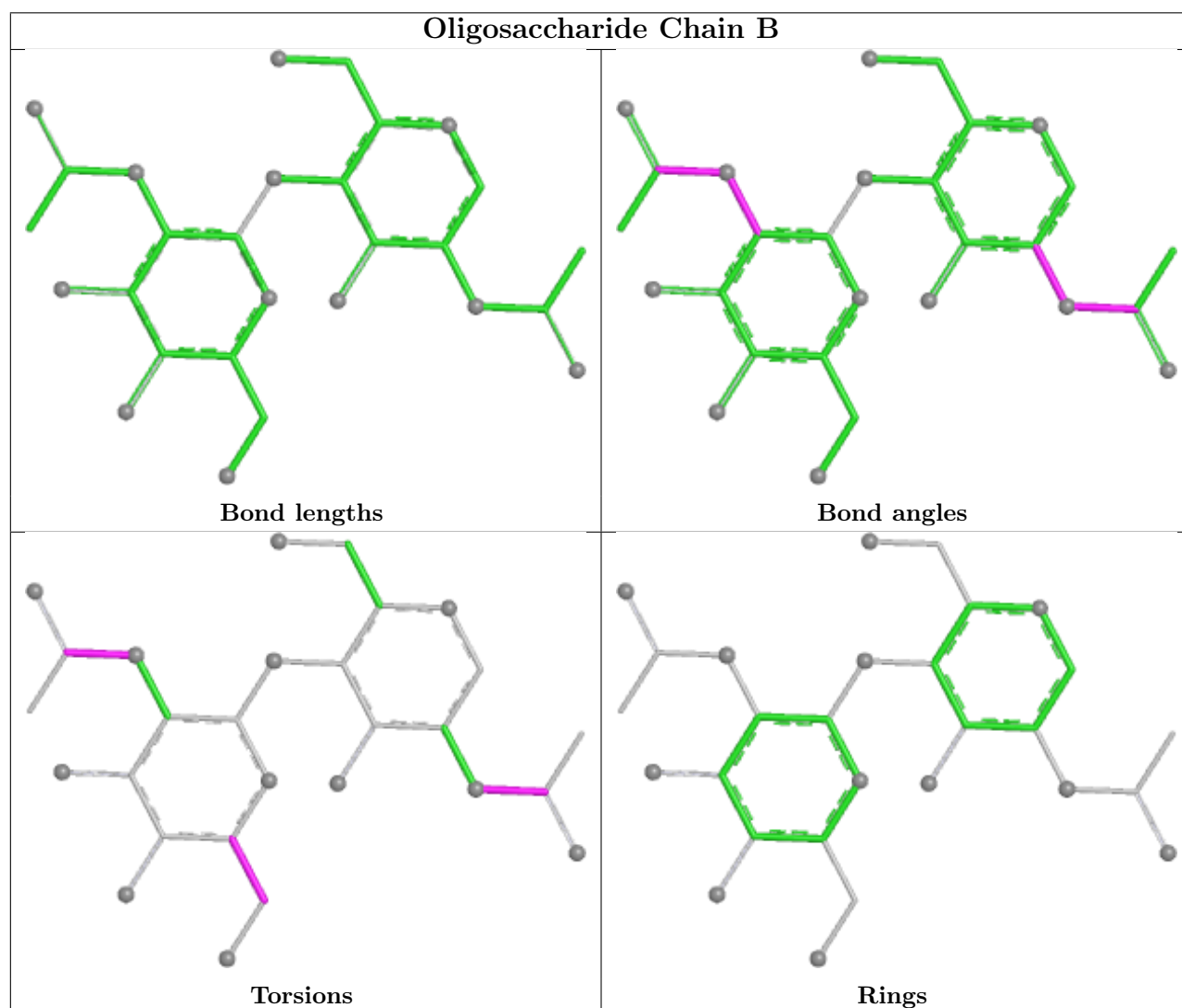
5 of 21 torsion outliers are listed below:

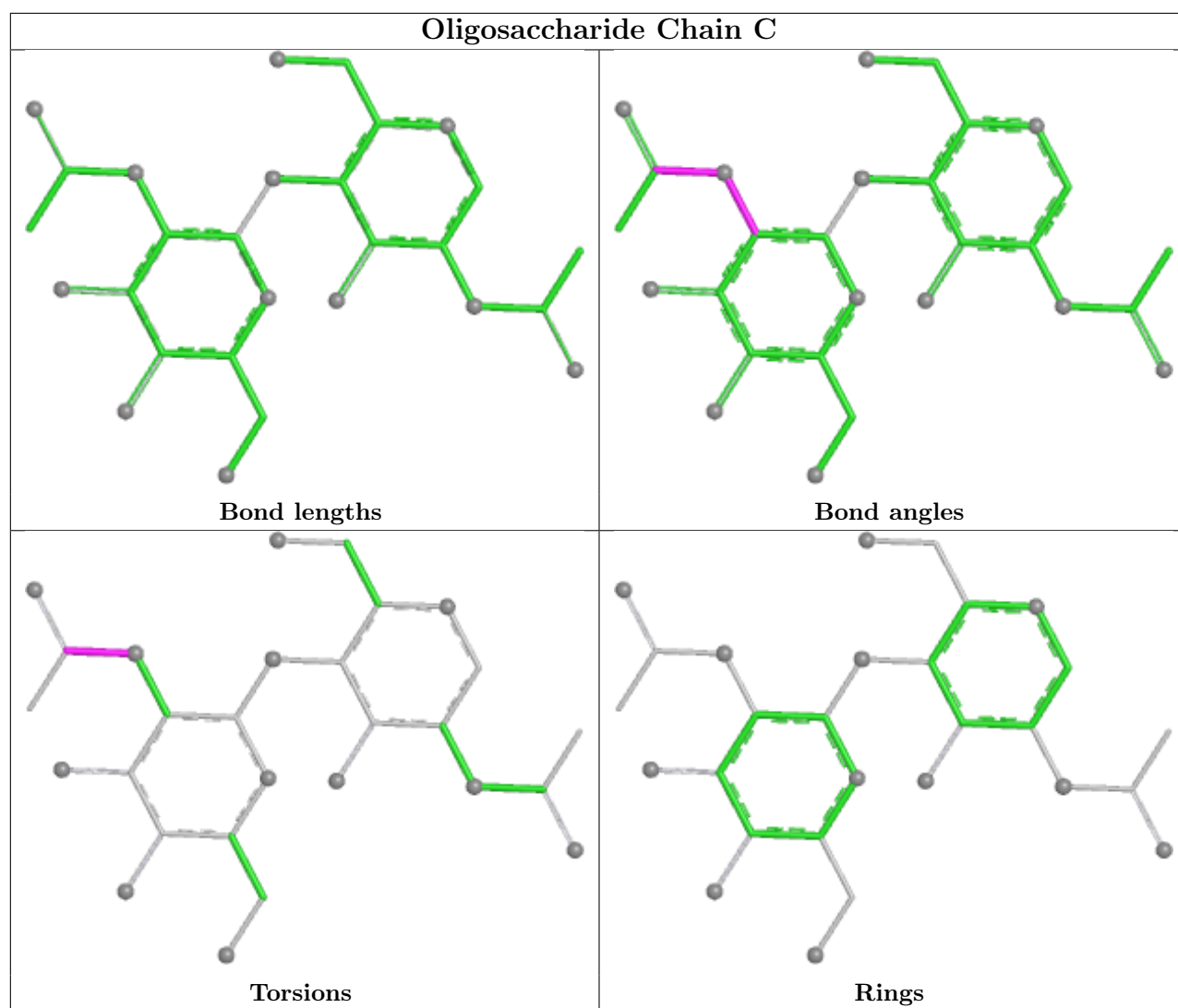
Mol	Chain	Res	Type	Atoms
2	D	2	NAG	O5-C5-C6-O6
2	D	2	NAG	C4-C5-C6-O6
3	E	1	NAG	O5-C5-C6-O6
2	B	1	NAG	C8-C7-N2-C2
2	B	1	NAG	O7-C7-N2-C2

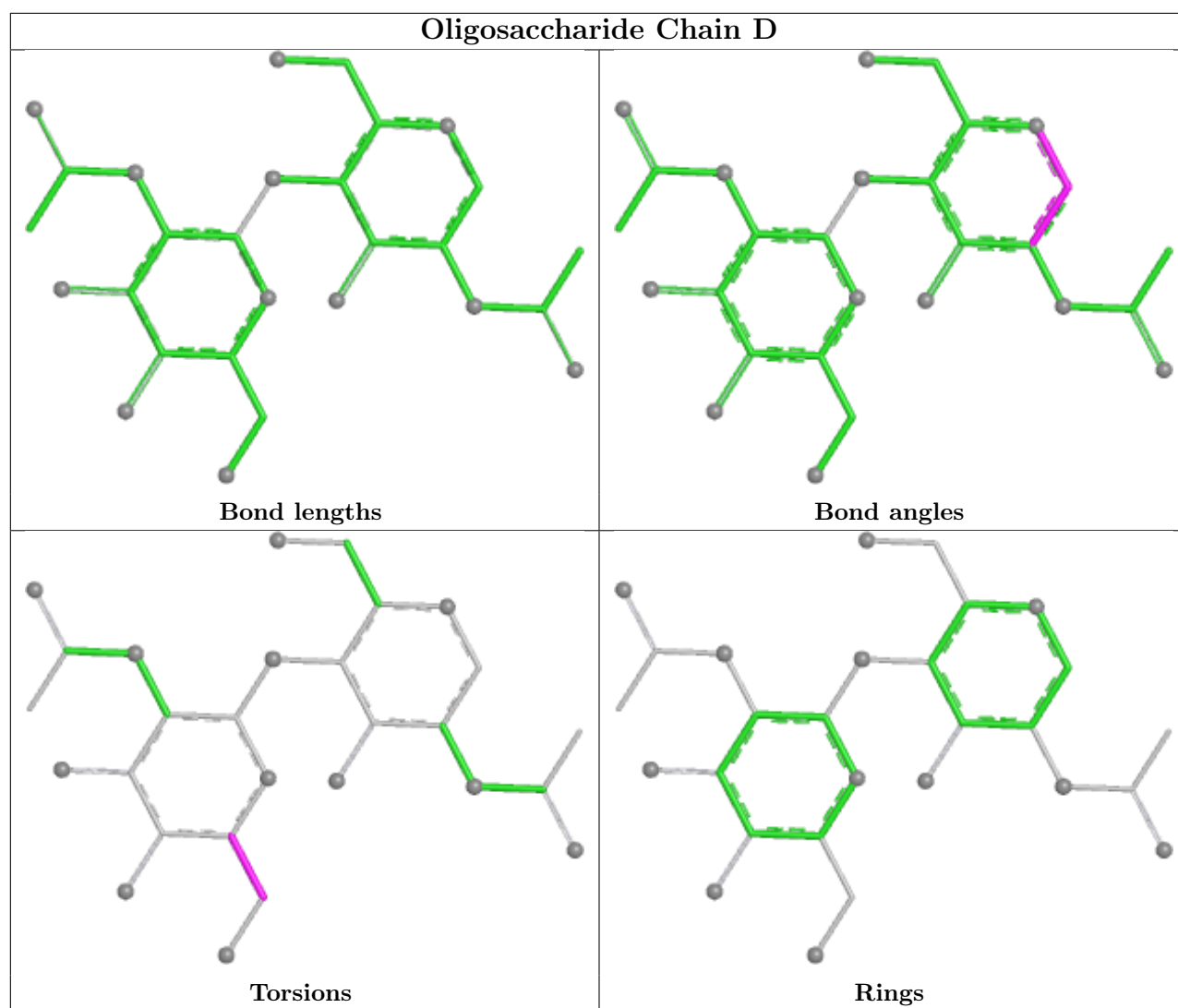
There are no ring outliers.

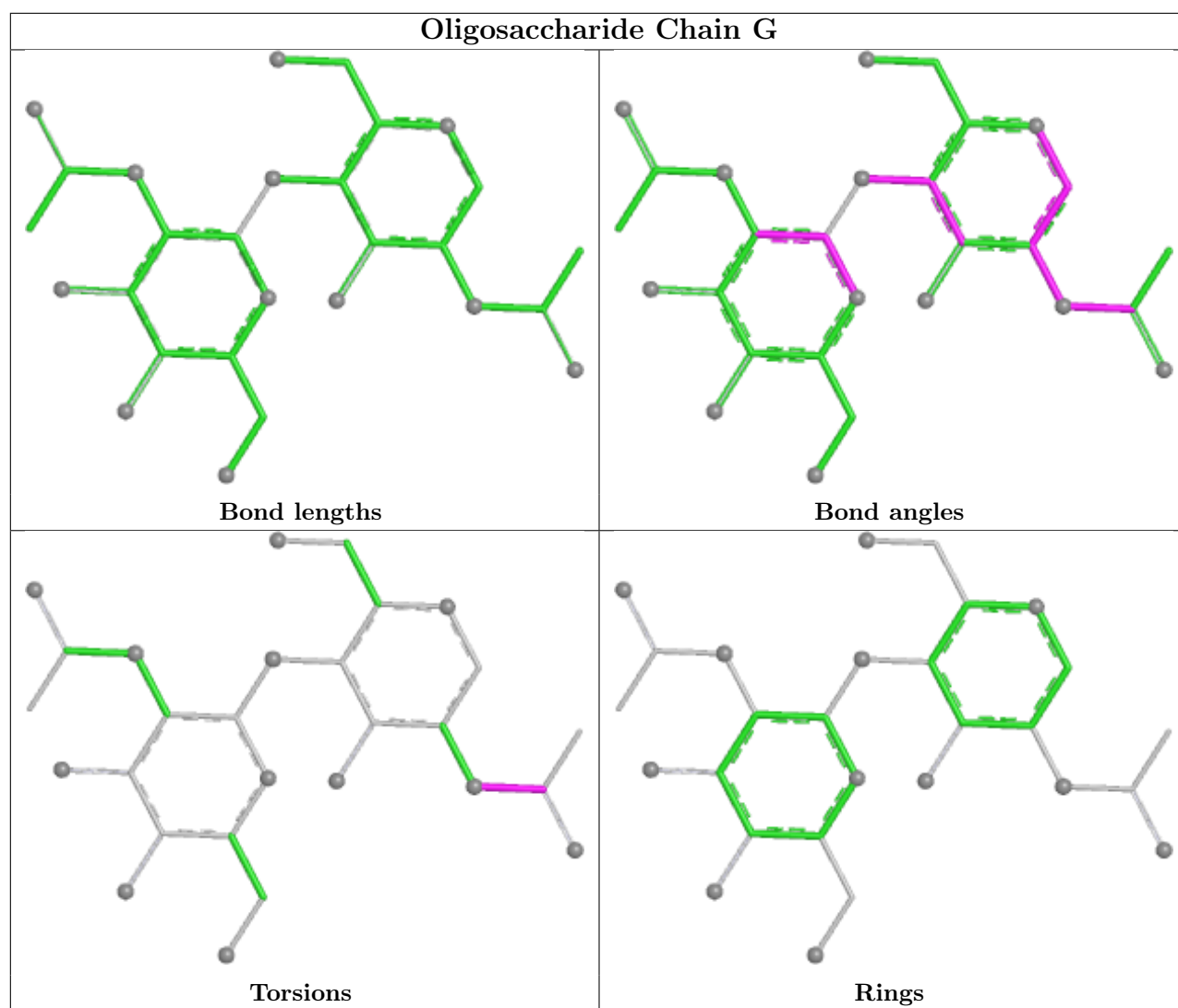
No monomer is involved in short contacts.

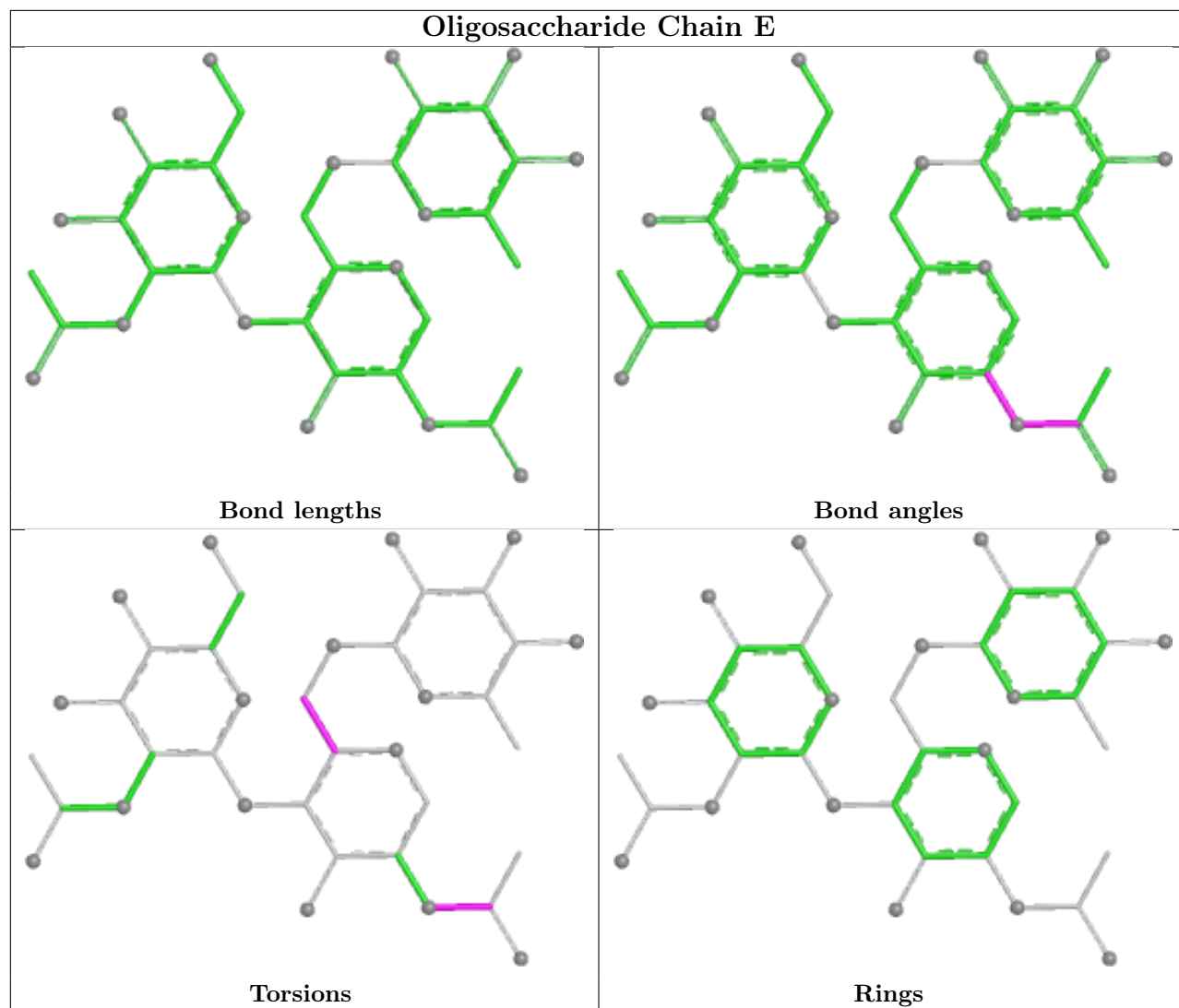
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for oligosaccharide.

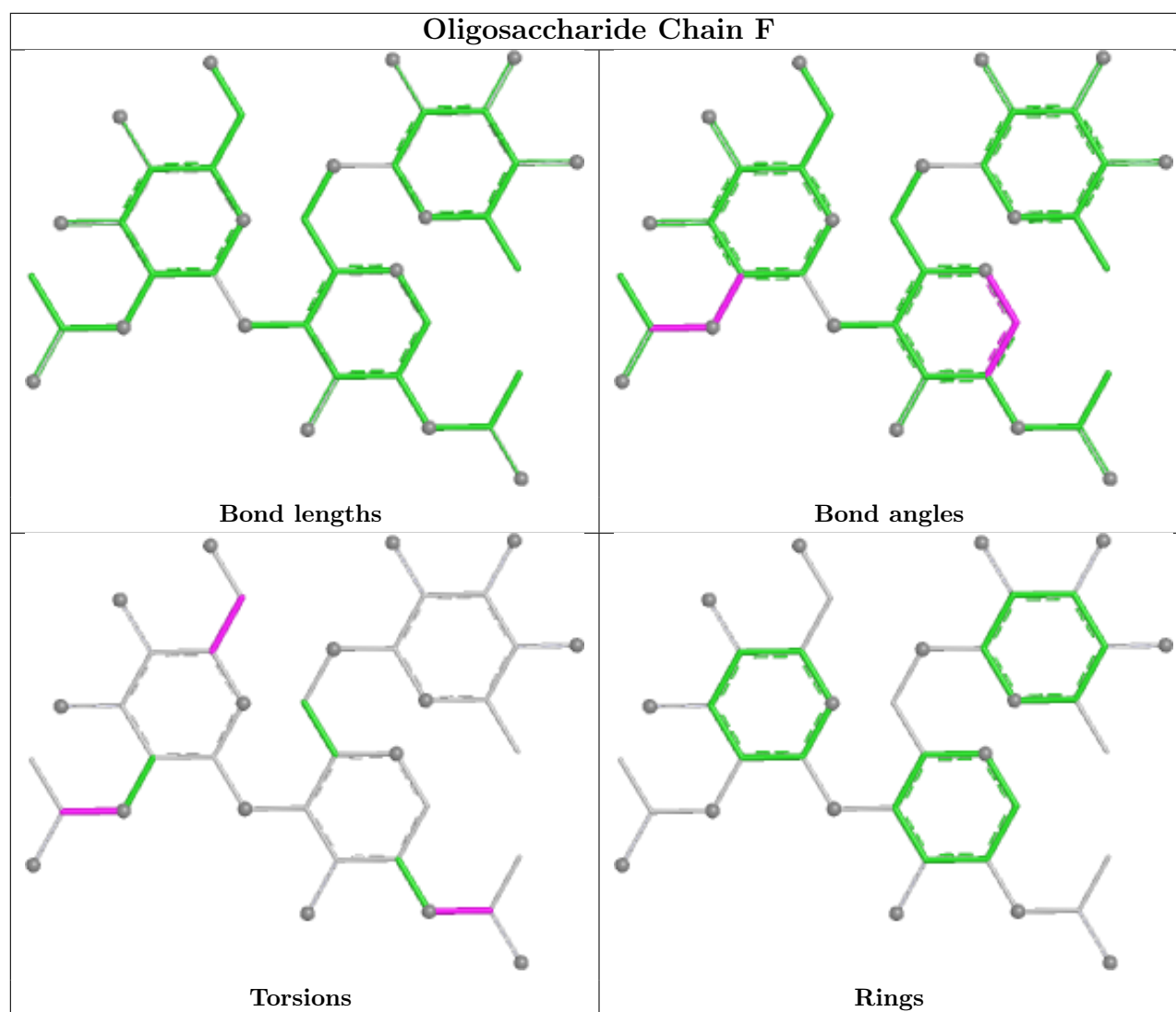












5.6 Ligand geometry [i](#)

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	$\# Z > 2$
4	NAG	A	1501	1	14,14,15	0.75	0	17,19,21	0.84	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
4	NAG	A	1501	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.

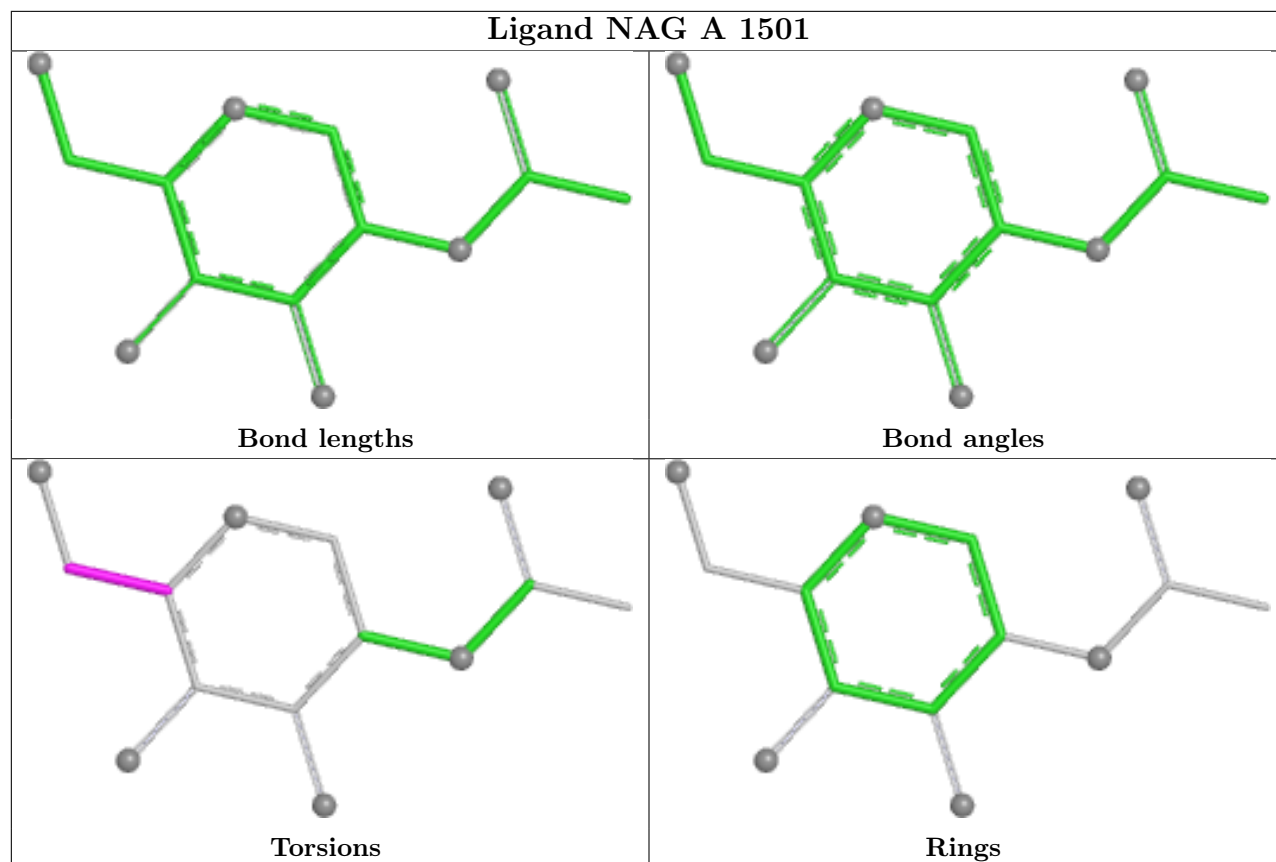
All (1) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	A	1501	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 than 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.



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.

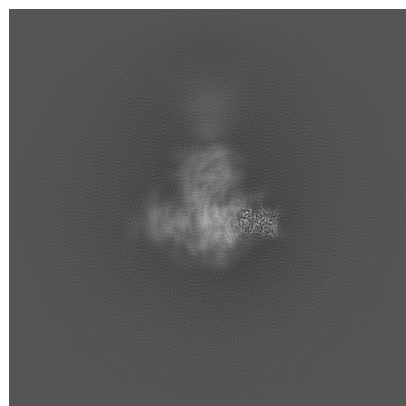
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-46716. These allow visual inspection of the internal detail of the map and identification of artifacts.

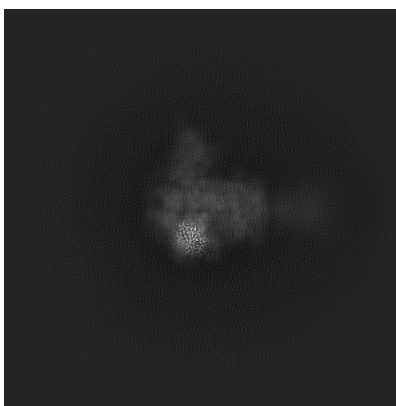
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

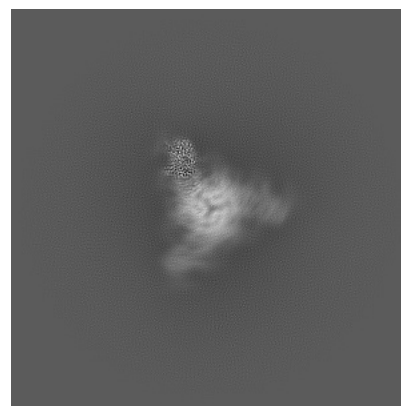
6.1.1 Primary map



X

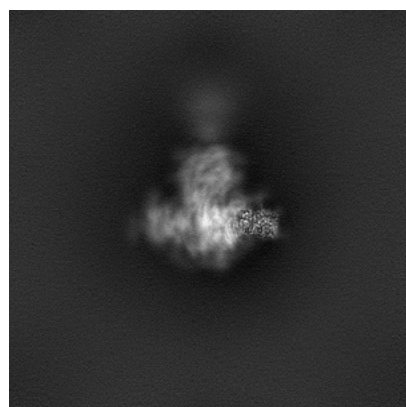


Y

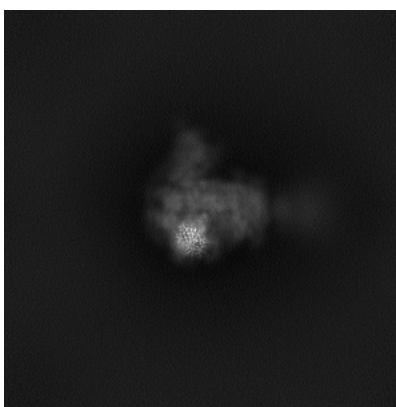


Z

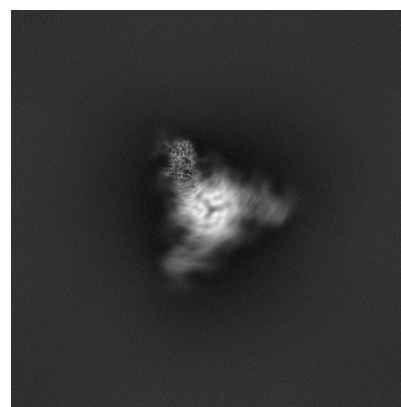
6.1.2 Raw map



X



Y

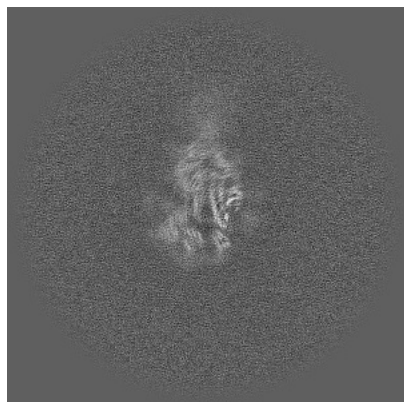


Z

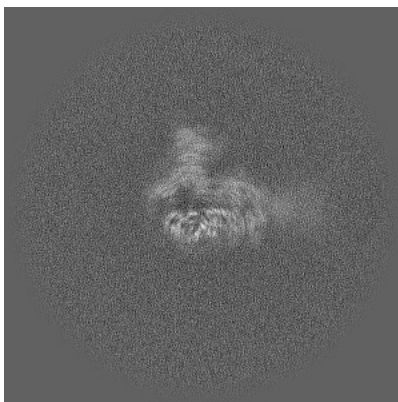
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

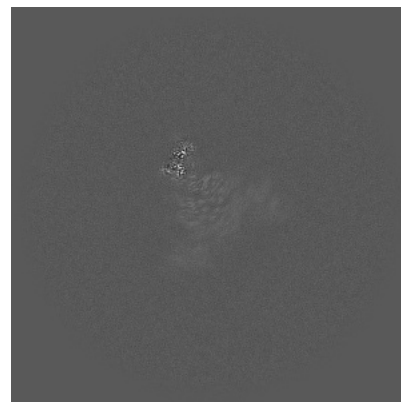
6.2.1 Primary map



X Index: 256

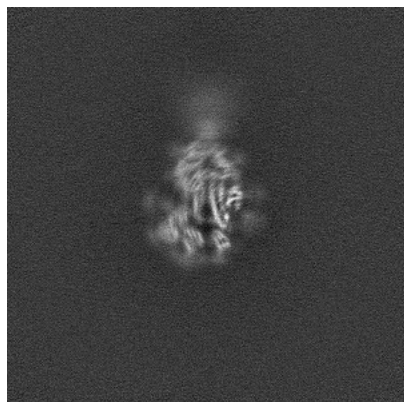


Y Index: 256

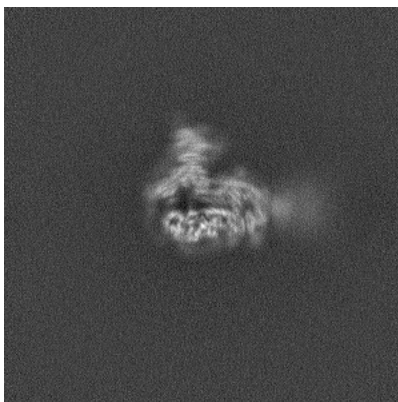


Z Index: 256

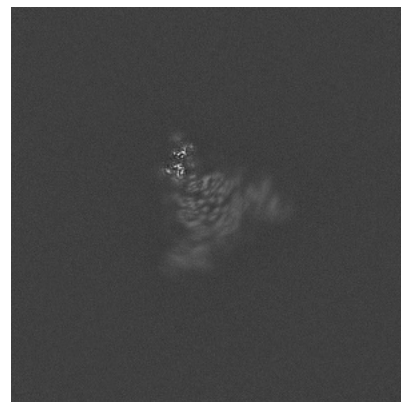
6.2.2 Raw map



X Index: 256



Y Index: 256



Z Index: 256

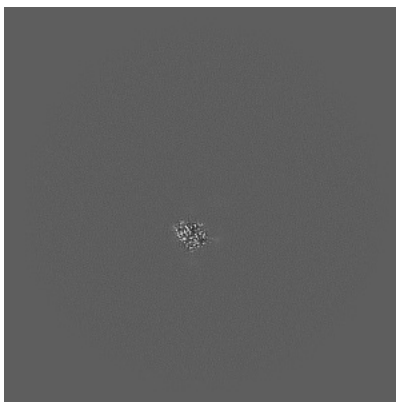
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

6.3.1 Primary map



X Index: 225



Y Index: 325

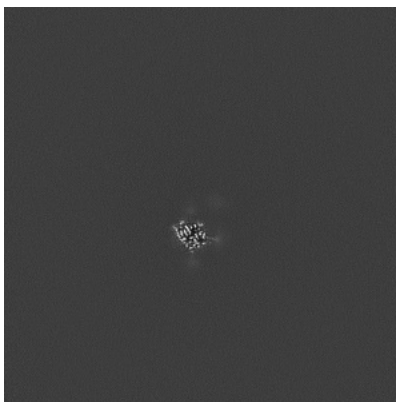


Z Index: 241

6.3.2 Raw map



X Index: 225



Y Index: 325

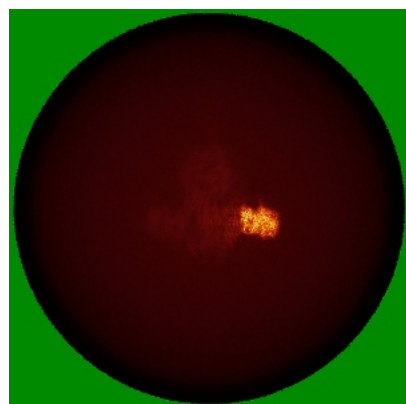


Z Index: 240

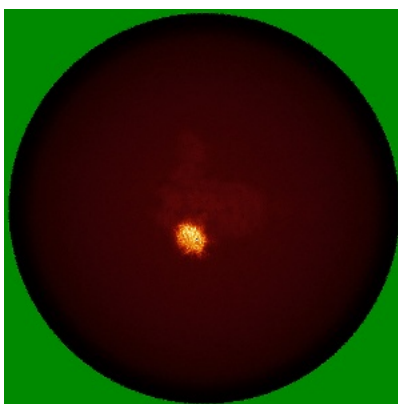
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal standard-deviation projections (False-color) [i](#)

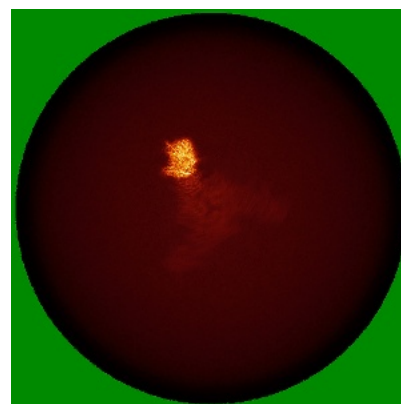
6.4.1 Primary map



X

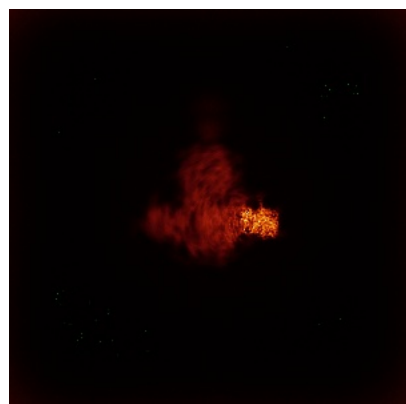


Y

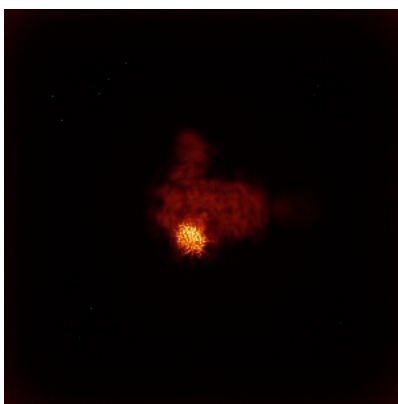


Z

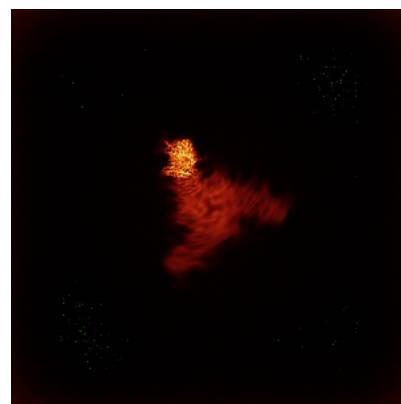
6.4.2 Raw map



X



Y

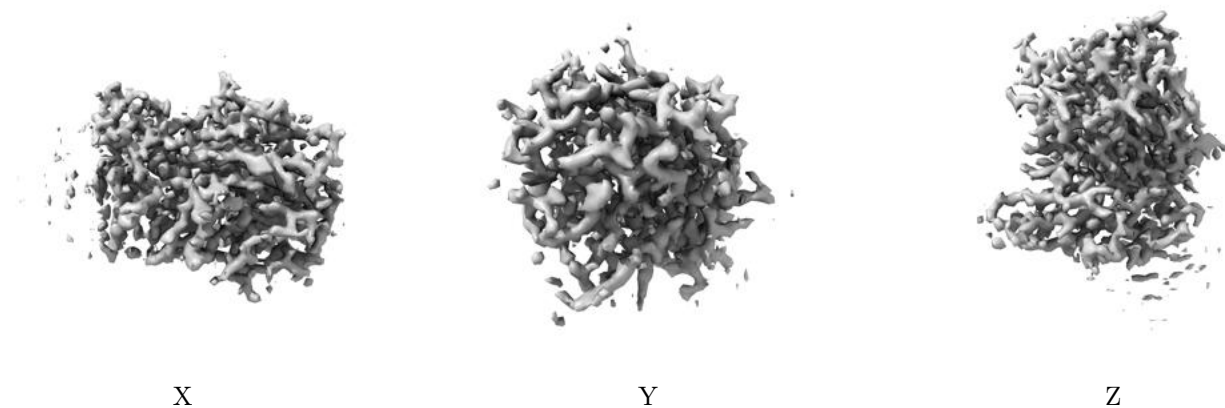


Z

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.

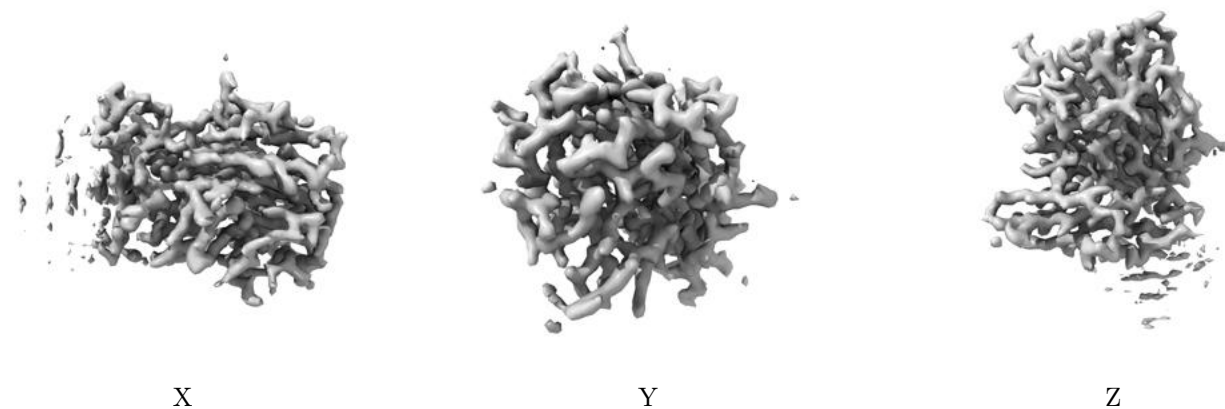
6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 1.37. 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



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.

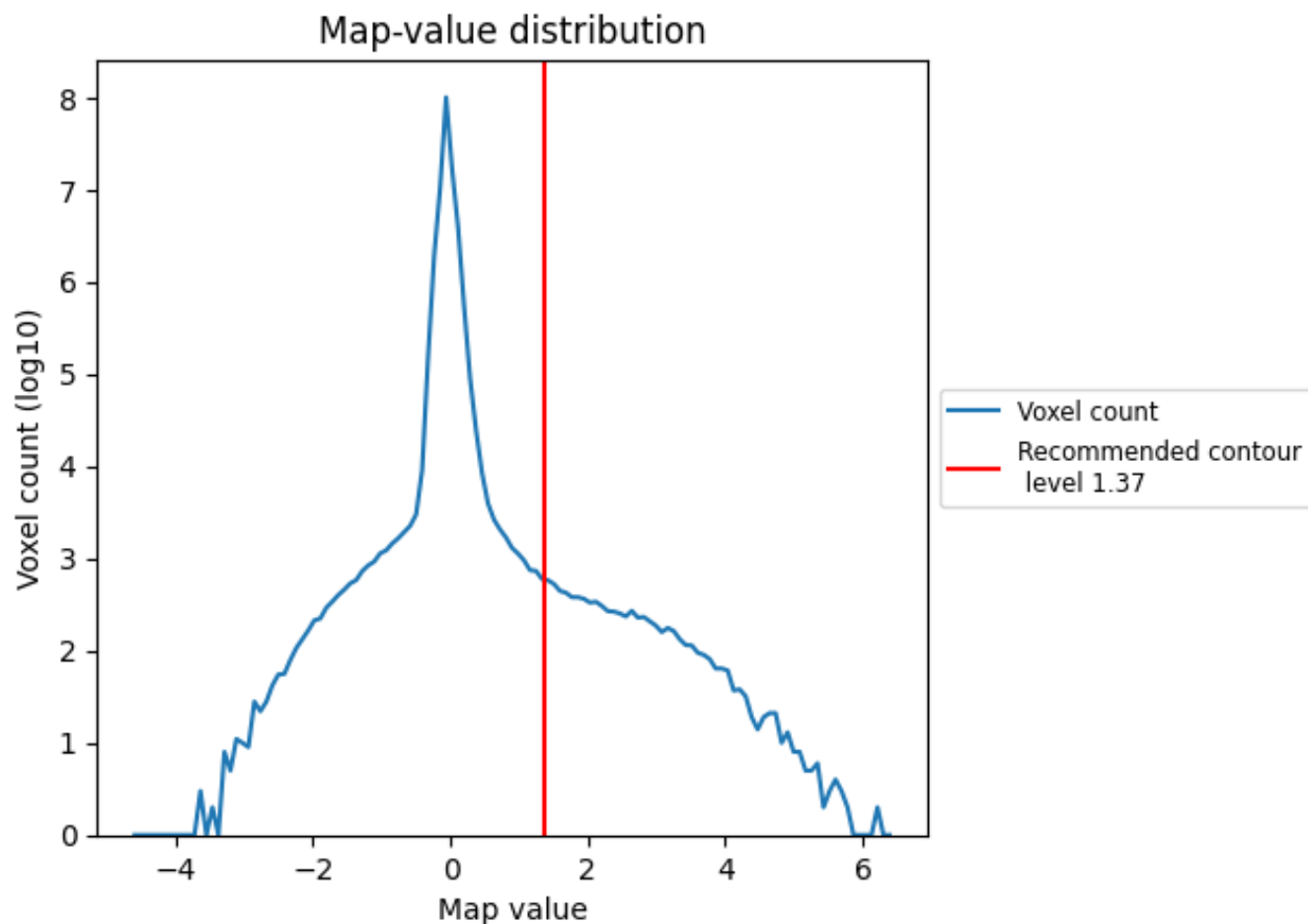
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

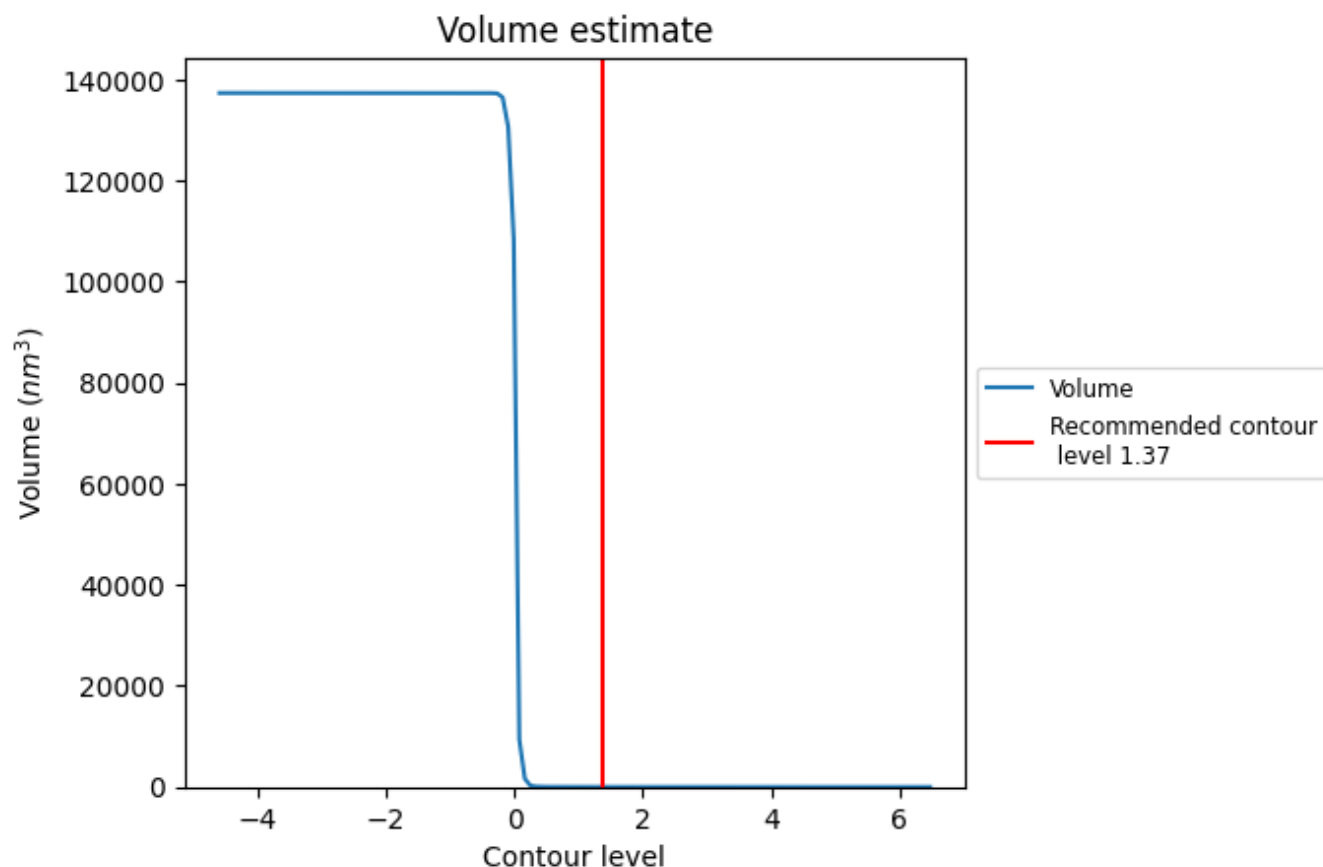
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution [i](#)



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.

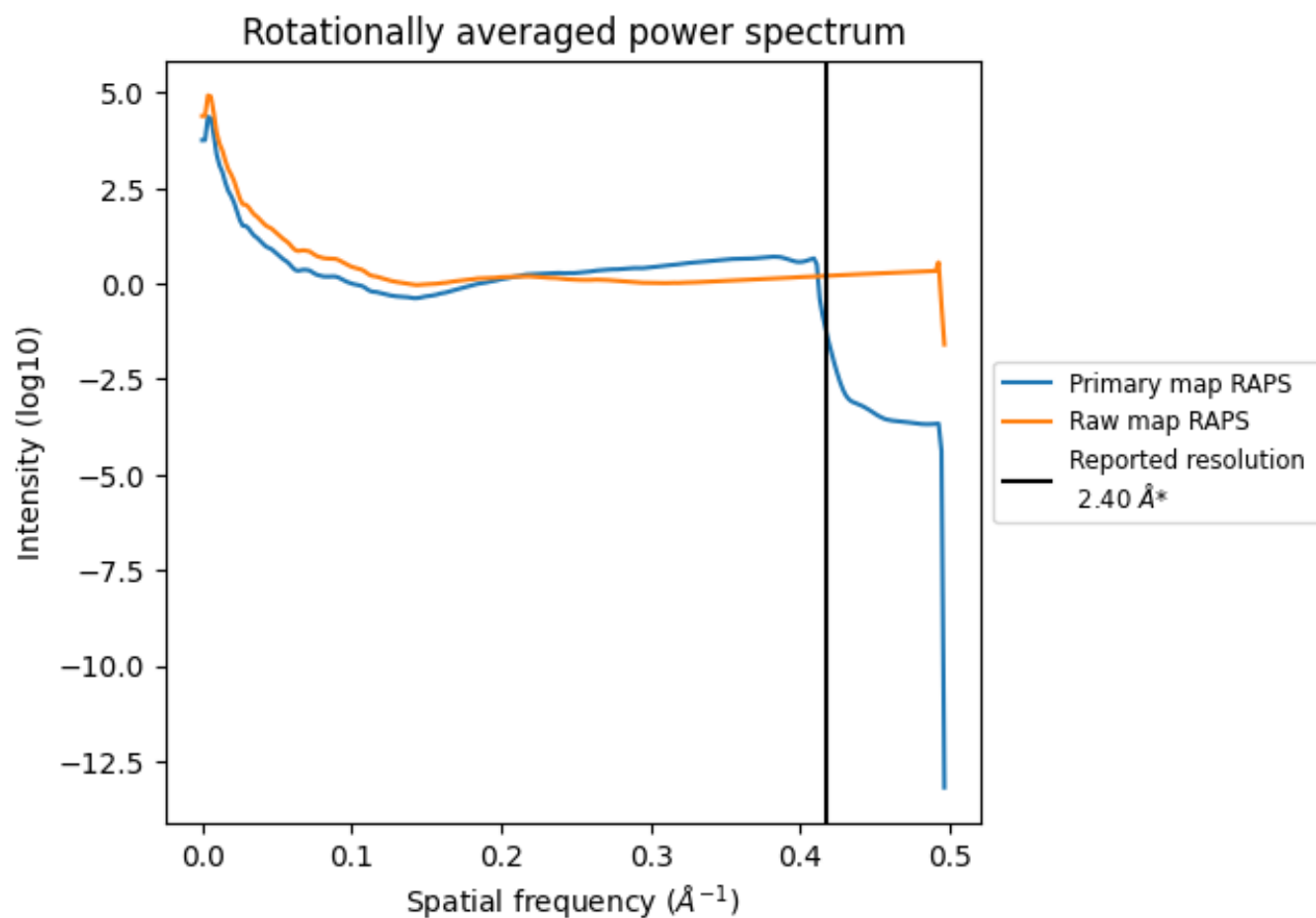
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 8 nm^3 ; this corresponds to an approximate mass of 8 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 ⓘ

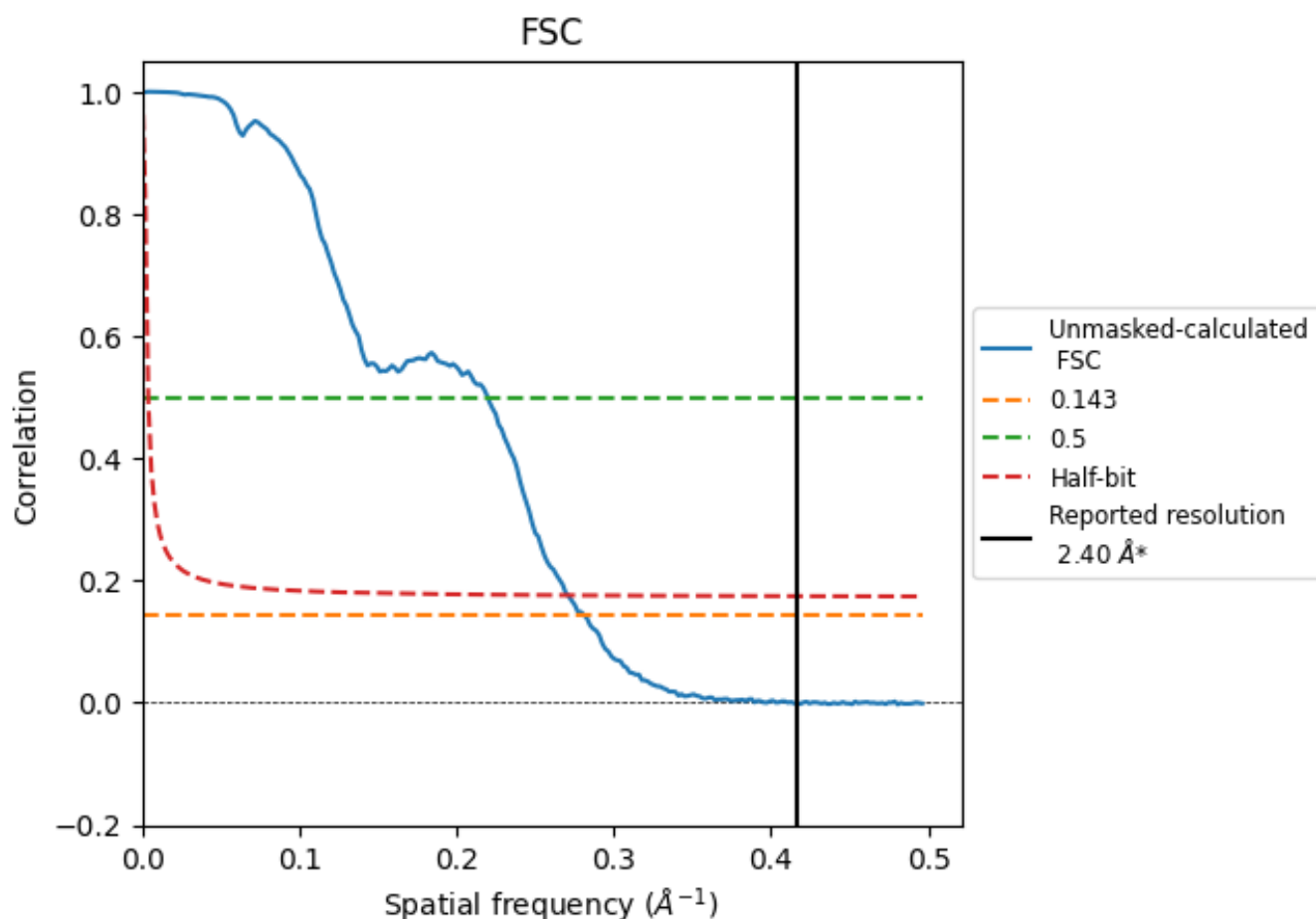


*Reported resolution corresponds to spatial frequency of 0.417 Å⁻¹

8 Fourier-Shell correlation [i](#)

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

8.1 FSC [i](#)



*Reported resolution corresponds to spatial frequency of 0.417 Å⁻¹

8.2 Resolution estimates [i](#)

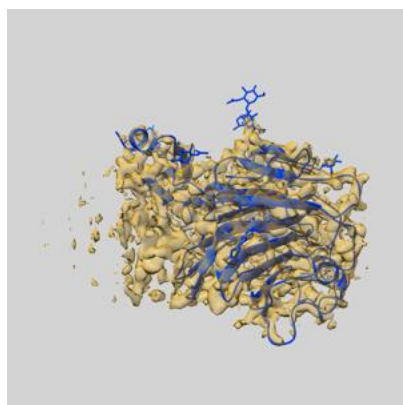
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.40	-	-
Author-provided FSC curve	-	-	-
Unmasked-calculated*	3.56	4.55	3.69

*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 3.56 differs from the reported value 2.4 by more than 10 %

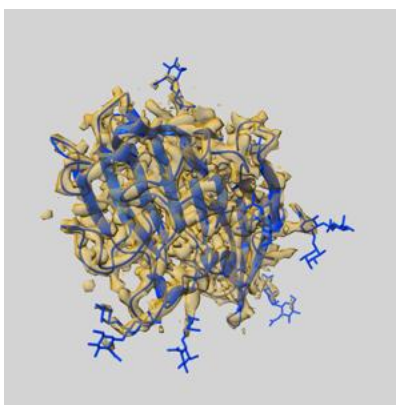
9 Map-model fit [i](#)

This section contains information regarding the fit between EMDB map EMD-46716 and PDB model 9DBE. Per-residue inclusion information can be found in section [3](#) on page [6](#).

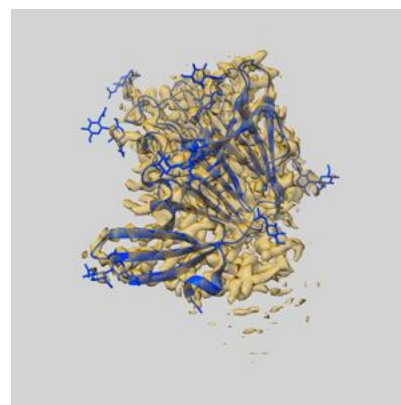
9.1 Map-model overlay [i](#)



X



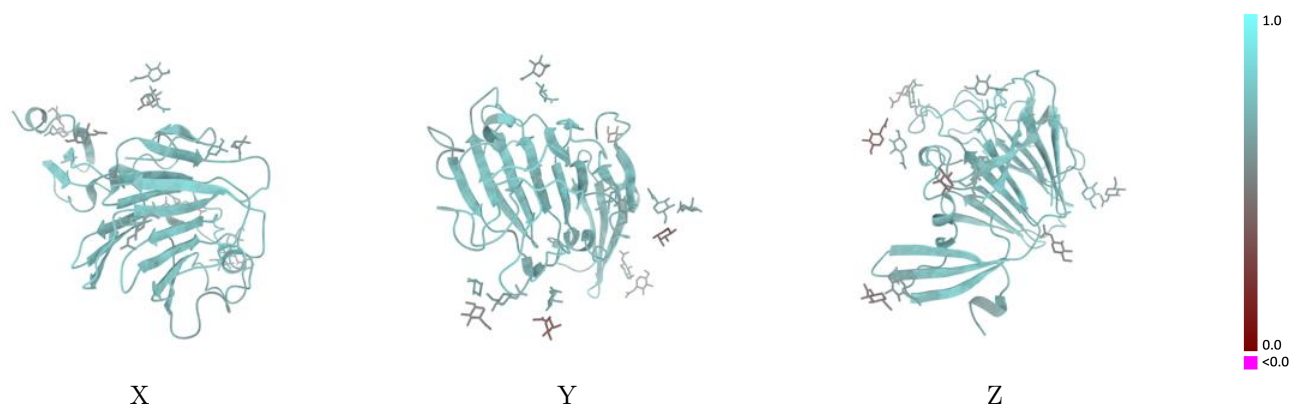
Y



Z

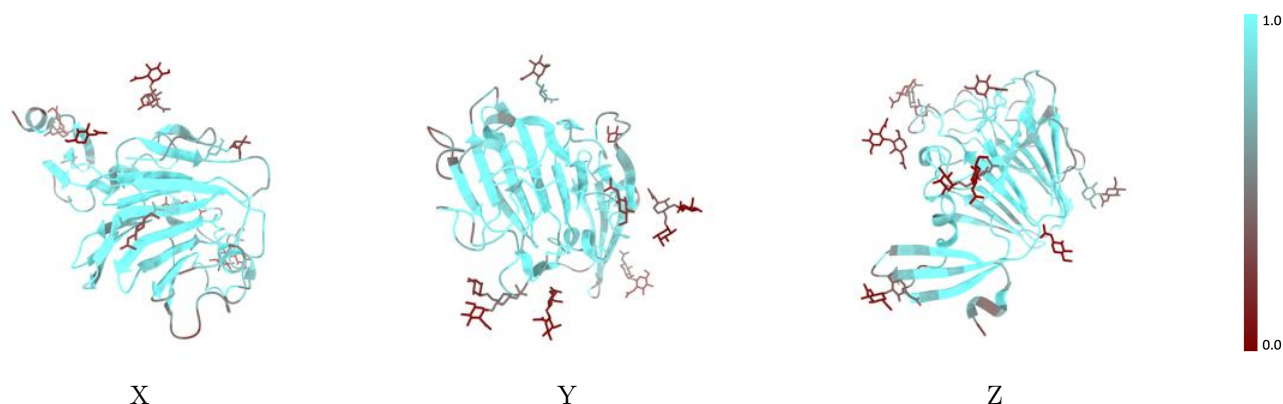
The images above show the 3D surface view of the map at the recommended contour level 1.37 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

9.2 Q-score mapped to coordinate model [i](#)



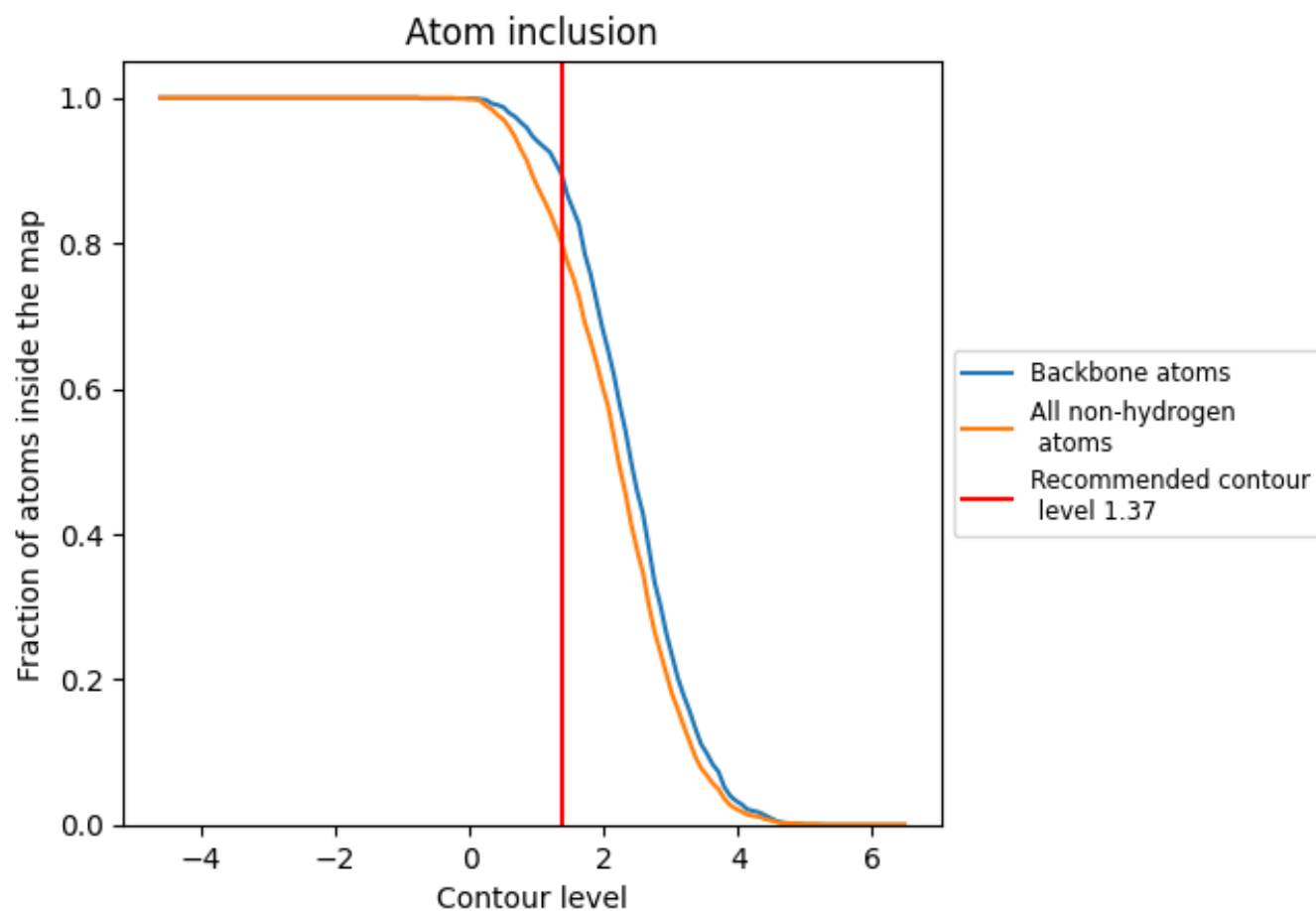
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 [i](#)



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 (1.37).

9.4 Atom inclusion [i](#)



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 (1.37) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	<div></div> 0.8020	<div></div> 0.6750
A	<div></div> 0.8560	<div></div> 0.6870
B	<div></div> 0.0710	<div></div> 0.4780
C	<div></div> 0.4640	<div></div> 0.6000
D	<div></div> 0.2140	<div></div> 0.4970
E	<div></div> 0.1320	<div></div> 0.5390
F	<div></div> 0.2370	<div></div> 0.5420
G	<div></div> 0.5360	<div></div> 0.6100

1.0

0.0

<0.0