WORLDWIDE wwPDB PROTEIN DATA BANK

Full wwPDB EM Validation Report (i)

Sep 2, 2025 – 04:55 PM EDT

PDB ID	:	9DDA / pdb_00009dda
EMDB ID	:	EMD-46762
Title	:	Cryo-EM structure of gB-Ecto.516P.531E.DS, a prefusion-stabilized HSV-1 glycoprotein B extracellular domain
Authors	:	Roark, R.S.; Shapiro, L.; Kwong, P.D.
Deposited on	:	2024-08-27
Resolution	:	2.99 Å(reported)

This is a Full wwPDB EM Validation 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:

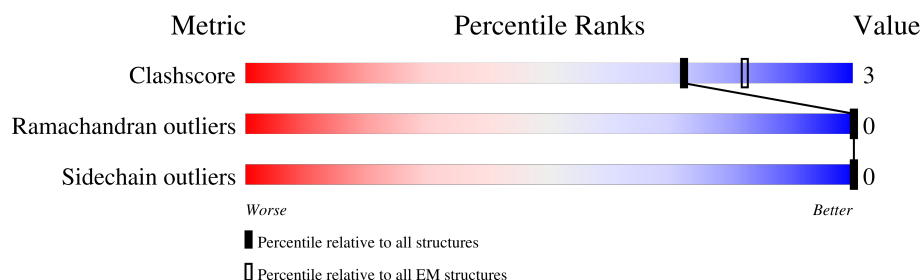|		
EMDB validation analysis	:	0.0.1.dev126
Mogul	:	2022.3.0, CSD as543be (2022)
MolProbity	:	4-5-2 with Phenix2.0rc1
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.45.1

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 2.99 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		3
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	210492	15764
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415

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	808	65% · 31%
1	B	808	64% 5% 31%
1	C	808	63% 6% 31%
2	D	2	50% 50%
2	F	2	50% 50%
2	H	2	50% 50%
3	E	3	33% 67% 33%
3	G	3	33% 67% 33%

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Mol	Chain	Length	Quality of chain
3	I	3	

2 Entry composition ⓘ

There are 4 unique types of molecules in this entry. The entry contains 13815 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 Glycoprotein B.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	560	Total	C	N	O	S	0	0
			4510	2838	790	859	23		
1	B	560	Total	C	N	O	S	0	0
			4510	2838	790	859	23		
1	C	560	Total	C	N	O	S	0	0
			4510	2838	790	859	23		

There are 252 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	240	CYS	ALA	conflict	UNP A1Z0P6
A	516	PRO	HIS	engineered mutation	UNP A1Z0P6
A	531	GLU	LEU	engineered mutation	UNP A1Z0P6
A	607	CYS	GLU	conflict	UNP A1Z0P6
A	729	GLY	-	expression tag	UNP A1Z0P6
A	730	SER	-	expression tag	UNP A1Z0P6
A	731	GLY	-	expression tag	UNP A1Z0P6
A	732	TYR	-	expression tag	UNP A1Z0P6
A	733	ILE	-	expression tag	UNP A1Z0P6
A	734	PRO	-	expression tag	UNP A1Z0P6
A	735	GLU	-	expression tag	UNP A1Z0P6
A	736	ALA	-	expression tag	UNP A1Z0P6
A	737	PRO	-	expression tag	UNP A1Z0P6
A	738	ARG	-	expression tag	UNP A1Z0P6
A	739	ASP	-	expression tag	UNP A1Z0P6
A	740	GLY	-	expression tag	UNP A1Z0P6
A	741	GLN	-	expression tag	UNP A1Z0P6
A	742	ALA	-	expression tag	UNP A1Z0P6
A	743	TYR	-	expression tag	UNP A1Z0P6
A	744	VAL	-	expression tag	UNP A1Z0P6
A	745	ARG	-	expression tag	UNP A1Z0P6
A	746	LYS	-	expression tag	UNP A1Z0P6
A	747	ASP	-	expression tag	UNP A1Z0P6
A	748	GLY	-	expression tag	UNP A1Z0P6

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Chain	Residue	Modelled	Actual	Comment	Reference
A	749	GLU	-	expression tag	UNP A1Z0P6
A	750	TRP	-	expression tag	UNP A1Z0P6
A	751	VAL	-	expression tag	UNP A1Z0P6
A	752	LEU	-	expression tag	UNP A1Z0P6
A	753	LEU	-	expression tag	UNP A1Z0P6
A	754	SER	-	expression tag	UNP A1Z0P6
A	755	THR	-	expression tag	UNP A1Z0P6
A	756	PHE	-	expression tag	UNP A1Z0P6
A	757	LEU	-	expression tag	UNP A1Z0P6
A	758	GLY	-	expression tag	UNP A1Z0P6
A	759	ARG	-	expression tag	UNP A1Z0P6
A	760	SER	-	expression tag	UNP A1Z0P6
A	761	LEU	-	expression tag	UNP A1Z0P6
A	762	GLU	-	expression tag	UNP A1Z0P6
A	763	VAL	-	expression tag	UNP A1Z0P6
A	764	LEU	-	expression tag	UNP A1Z0P6
A	765	PHE	-	expression tag	UNP A1Z0P6
A	766	GLN	-	expression tag	UNP A1Z0P6
A	767	GLY	-	expression tag	UNP A1Z0P6
A	768	PRO	-	expression tag	UNP A1Z0P6
A	769	GLY	-	expression tag	UNP A1Z0P6
A	770	HIS	-	expression tag	UNP A1Z0P6
A	771	HIS	-	expression tag	UNP A1Z0P6
A	772	HIS	-	expression tag	UNP A1Z0P6
A	773	HIS	-	expression tag	UNP A1Z0P6
A	774	HIS	-	expression tag	UNP A1Z0P6
A	775	HIS	-	expression tag	UNP A1Z0P6
A	776	HIS	-	expression tag	UNP A1Z0P6
A	777	HIS	-	expression tag	UNP A1Z0P6
A	778	SER	-	expression tag	UNP A1Z0P6
A	779	ALA	-	expression tag	UNP A1Z0P6
A	780	TRP	-	expression tag	UNP A1Z0P6
A	781	SER	-	expression tag	UNP A1Z0P6
A	782	HIS	-	expression tag	UNP A1Z0P6
A	783	PRO	-	expression tag	UNP A1Z0P6
A	784	GLN	-	expression tag	UNP A1Z0P6
A	785	PHE	-	expression tag	UNP A1Z0P6
A	786	GLU	-	expression tag	UNP A1Z0P6
A	787	LYS	-	expression tag	UNP A1Z0P6
A	788	GLY	-	expression tag	UNP A1Z0P6
A	789	GLY	-	expression tag	UNP A1Z0P6
A	790	GLY	-	expression tag	UNP A1Z0P6

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Chain	Residue	Modelled	Actual	Comment	Reference
A	791	SER	-	expression tag	UNP A1Z0P6
A	792	GLY	-	expression tag	UNP A1Z0P6
A	793	GLY	-	expression tag	UNP A1Z0P6
A	794	GLY	-	expression tag	UNP A1Z0P6
A	795	GLY	-	expression tag	UNP A1Z0P6
A	796	SER	-	expression tag	UNP A1Z0P6
A	797	GLY	-	expression tag	UNP A1Z0P6
A	798	GLY	-	expression tag	UNP A1Z0P6
A	799	SER	-	expression tag	UNP A1Z0P6
A	800	ALA	-	expression tag	UNP A1Z0P6
A	801	TRP	-	expression tag	UNP A1Z0P6
A	802	SER	-	expression tag	UNP A1Z0P6
A	803	HIS	-	expression tag	UNP A1Z0P6
A	804	PRO	-	expression tag	UNP A1Z0P6
A	805	GLN	-	expression tag	UNP A1Z0P6
A	806	PHE	-	expression tag	UNP A1Z0P6
A	807	GLU	-	expression tag	UNP A1Z0P6
A	808	LYS	-	expression tag	UNP A1Z0P6
B	240	CYS	ALA	conflict	UNP A1Z0P6
B	516	PRO	HIS	engineered mutation	UNP A1Z0P6
B	531	GLU	LEU	engineered mutation	UNP A1Z0P6
B	607	CYS	GLU	conflict	UNP A1Z0P6
B	729	GLY	-	expression tag	UNP A1Z0P6
B	730	SER	-	expression tag	UNP A1Z0P6
B	731	GLY	-	expression tag	UNP A1Z0P6
B	732	TYR	-	expression tag	UNP A1Z0P6
B	733	ILE	-	expression tag	UNP A1Z0P6
B	734	PRO	-	expression tag	UNP A1Z0P6
B	735	GLU	-	expression tag	UNP A1Z0P6
B	736	ALA	-	expression tag	UNP A1Z0P6
B	737	PRO	-	expression tag	UNP A1Z0P6
B	738	ARG	-	expression tag	UNP A1Z0P6
B	739	ASP	-	expression tag	UNP A1Z0P6
B	740	GLY	-	expression tag	UNP A1Z0P6
B	741	GLN	-	expression tag	UNP A1Z0P6
B	742	ALA	-	expression tag	UNP A1Z0P6
B	743	TYR	-	expression tag	UNP A1Z0P6
B	744	VAL	-	expression tag	UNP A1Z0P6
B	745	ARG	-	expression tag	UNP A1Z0P6
B	746	LYS	-	expression tag	UNP A1Z0P6
B	747	ASP	-	expression tag	UNP A1Z0P6
B	748	GLY	-	expression tag	UNP A1Z0P6

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Chain	Residue	Modelled	Actual	Comment	Reference
B	749	GLU	-	expression tag	UNP A1Z0P6
B	750	TRP	-	expression tag	UNP A1Z0P6
B	751	VAL	-	expression tag	UNP A1Z0P6
B	752	LEU	-	expression tag	UNP A1Z0P6
B	753	LEU	-	expression tag	UNP A1Z0P6
B	754	SER	-	expression tag	UNP A1Z0P6
B	755	THR	-	expression tag	UNP A1Z0P6
B	756	PHE	-	expression tag	UNP A1Z0P6
B	757	LEU	-	expression tag	UNP A1Z0P6
B	758	GLY	-	expression tag	UNP A1Z0P6
B	759	ARG	-	expression tag	UNP A1Z0P6
B	760	SER	-	expression tag	UNP A1Z0P6
B	761	LEU	-	expression tag	UNP A1Z0P6
B	762	GLU	-	expression tag	UNP A1Z0P6
B	763	VAL	-	expression tag	UNP A1Z0P6
B	764	LEU	-	expression tag	UNP A1Z0P6
B	765	PHE	-	expression tag	UNP A1Z0P6
B	766	GLN	-	expression tag	UNP A1Z0P6
B	767	GLY	-	expression tag	UNP A1Z0P6
B	768	PRO	-	expression tag	UNP A1Z0P6
B	769	GLY	-	expression tag	UNP A1Z0P6
B	770	HIS	-	expression tag	UNP A1Z0P6
B	771	HIS	-	expression tag	UNP A1Z0P6
B	772	HIS	-	expression tag	UNP A1Z0P6
B	773	HIS	-	expression tag	UNP A1Z0P6
B	774	HIS	-	expression tag	UNP A1Z0P6
B	775	HIS	-	expression tag	UNP A1Z0P6
B	776	HIS	-	expression tag	UNP A1Z0P6
B	777	HIS	-	expression tag	UNP A1Z0P6
B	778	SER	-	expression tag	UNP A1Z0P6
B	779	ALA	-	expression tag	UNP A1Z0P6
B	780	TRP	-	expression tag	UNP A1Z0P6
B	781	SER	-	expression tag	UNP A1Z0P6
B	782	HIS	-	expression tag	UNP A1Z0P6
B	783	PRO	-	expression tag	UNP A1Z0P6
B	784	GLN	-	expression tag	UNP A1Z0P6
B	785	PHE	-	expression tag	UNP A1Z0P6
B	786	GLU	-	expression tag	UNP A1Z0P6
B	787	LYS	-	expression tag	UNP A1Z0P6
B	788	GLY	-	expression tag	UNP A1Z0P6
B	789	GLY	-	expression tag	UNP A1Z0P6
B	790	GLY	-	expression tag	UNP A1Z0P6

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Chain	Residue	Modelled	Actual	Comment	Reference
B	791	SER	-	expression tag	UNP A1Z0P6
B	792	GLY	-	expression tag	UNP A1Z0P6
B	793	GLY	-	expression tag	UNP A1Z0P6
B	794	GLY	-	expression tag	UNP A1Z0P6
B	795	GLY	-	expression tag	UNP A1Z0P6
B	796	SER	-	expression tag	UNP A1Z0P6
B	797	GLY	-	expression tag	UNP A1Z0P6
B	798	GLY	-	expression tag	UNP A1Z0P6
B	799	SER	-	expression tag	UNP A1Z0P6
B	800	ALA	-	expression tag	UNP A1Z0P6
B	801	TRP	-	expression tag	UNP A1Z0P6
B	802	SER	-	expression tag	UNP A1Z0P6
B	803	HIS	-	expression tag	UNP A1Z0P6
B	804	PRO	-	expression tag	UNP A1Z0P6
B	805	GLN	-	expression tag	UNP A1Z0P6
B	806	PHE	-	expression tag	UNP A1Z0P6
B	807	GLU	-	expression tag	UNP A1Z0P6
B	808	LYS	-	expression tag	UNP A1Z0P6
C	240	CYS	ALA	conflict	UNP A1Z0P6
C	516	PRO	HIS	engineered mutation	UNP A1Z0P6
C	531	GLU	LEU	engineered mutation	UNP A1Z0P6
C	607	CYS	GLU	conflict	UNP A1Z0P6
C	729	GLY	-	expression tag	UNP A1Z0P6
C	730	SER	-	expression tag	UNP A1Z0P6
C	731	GLY	-	expression tag	UNP A1Z0P6
C	732	TYR	-	expression tag	UNP A1Z0P6
C	733	ILE	-	expression tag	UNP A1Z0P6
C	734	PRO	-	expression tag	UNP A1Z0P6
C	735	GLU	-	expression tag	UNP A1Z0P6
C	736	ALA	-	expression tag	UNP A1Z0P6
C	737	PRO	-	expression tag	UNP A1Z0P6
C	738	ARG	-	expression tag	UNP A1Z0P6
C	739	ASP	-	expression tag	UNP A1Z0P6
C	740	GLY	-	expression tag	UNP A1Z0P6
C	741	GLN	-	expression tag	UNP A1Z0P6
C	742	ALA	-	expression tag	UNP A1Z0P6
C	743	TYR	-	expression tag	UNP A1Z0P6
C	744	VAL	-	expression tag	UNP A1Z0P6
C	745	ARG	-	expression tag	UNP A1Z0P6
C	746	LYS	-	expression tag	UNP A1Z0P6
C	747	ASP	-	expression tag	UNP A1Z0P6
C	748	GLY	-	expression tag	UNP A1Z0P6

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Chain	Residue	Modelled	Actual	Comment	Reference
C	749	GLU	-	expression tag	UNP A1Z0P6
C	750	TRP	-	expression tag	UNP A1Z0P6
C	751	VAL	-	expression tag	UNP A1Z0P6
C	752	LEU	-	expression tag	UNP A1Z0P6
C	753	LEU	-	expression tag	UNP A1Z0P6
C	754	SER	-	expression tag	UNP A1Z0P6
C	755	THR	-	expression tag	UNP A1Z0P6
C	756	PHE	-	expression tag	UNP A1Z0P6
C	757	LEU	-	expression tag	UNP A1Z0P6
C	758	GLY	-	expression tag	UNP A1Z0P6
C	759	ARG	-	expression tag	UNP A1Z0P6
C	760	SER	-	expression tag	UNP A1Z0P6
C	761	LEU	-	expression tag	UNP A1Z0P6
C	762	GLU	-	expression tag	UNP A1Z0P6
C	763	VAL	-	expression tag	UNP A1Z0P6
C	764	LEU	-	expression tag	UNP A1Z0P6
C	765	PHE	-	expression tag	UNP A1Z0P6
C	766	GLN	-	expression tag	UNP A1Z0P6
C	767	GLY	-	expression tag	UNP A1Z0P6
C	768	PRO	-	expression tag	UNP A1Z0P6
C	769	GLY	-	expression tag	UNP A1Z0P6
C	770	HIS	-	expression tag	UNP A1Z0P6
C	771	HIS	-	expression tag	UNP A1Z0P6
C	772	HIS	-	expression tag	UNP A1Z0P6
C	773	HIS	-	expression tag	UNP A1Z0P6
C	774	HIS	-	expression tag	UNP A1Z0P6
C	775	HIS	-	expression tag	UNP A1Z0P6
C	776	HIS	-	expression tag	UNP A1Z0P6
C	777	HIS	-	expression tag	UNP A1Z0P6
C	778	SER	-	expression tag	UNP A1Z0P6
C	779	ALA	-	expression tag	UNP A1Z0P6
C	780	TRP	-	expression tag	UNP A1Z0P6
C	781	SER	-	expression tag	UNP A1Z0P6
C	782	HIS	-	expression tag	UNP A1Z0P6
C	783	PRO	-	expression tag	UNP A1Z0P6
C	784	GLN	-	expression tag	UNP A1Z0P6
C	785	PHE	-	expression tag	UNP A1Z0P6
C	786	GLU	-	expression tag	UNP A1Z0P6
C	787	LYS	-	expression tag	UNP A1Z0P6
C	788	GLY	-	expression tag	UNP A1Z0P6
C	789	GLY	-	expression tag	UNP A1Z0P6
C	790	GLY	-	expression tag	UNP A1Z0P6

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Chain	Residue	Modelled	Actual	Comment	Reference
C	791	SER	-	expression tag	UNP A1Z0P6
C	792	GLY	-	expression tag	UNP A1Z0P6
C	793	GLY	-	expression tag	UNP A1Z0P6
C	794	GLY	-	expression tag	UNP A1Z0P6
C	795	GLY	-	expression tag	UNP A1Z0P6
C	796	SER	-	expression tag	UNP A1Z0P6
C	797	GLY	-	expression tag	UNP A1Z0P6
C	798	GLY	-	expression tag	UNP A1Z0P6
C	799	SER	-	expression tag	UNP A1Z0P6
C	800	ALA	-	expression tag	UNP A1Z0P6
C	801	TRP	-	expression tag	UNP A1Z0P6
C	802	SER	-	expression tag	UNP A1Z0P6
C	803	HIS	-	expression tag	UNP A1Z0P6
C	804	PRO	-	expression tag	UNP A1Z0P6
C	805	GLN	-	expression tag	UNP A1Z0P6
C	806	PHE	-	expression tag	UNP A1Z0P6
C	807	GLU	-	expression tag	UNP A1Z0P6
C	808	LYS	-	expression tag	UNP A1Z0P6

- Molecule 2 is an oligosaccharide called 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.
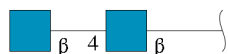
Mol	Chain	Residues	Atoms				AltConf	Trace
2	D	2	Total	C	N	O	0	0
			28	16	2	10		
2	F	2	Total	C	N	O	0	0
			28	16	2	10		
2	H	2	Total	C	N	O	0	0
			28	16	2	10		

- Molecule 3 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.
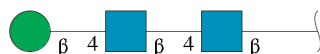
Mol	Chain	Residues	Atoms				AltConf	Trace
3	E	3	Total 39	C 22	N 2	O 15	0	0
3	G	3	Total 39	C 22	N 2	O 15	0	0
3	I	3	Total 39	C 22	N 2	O 15	0	0

- Molecule 4 is 2-acetamido-2-deoxy-beta-D-glucopyranose (CCD ID: NAG) (formula: $C_8H_{15}NO_6$).
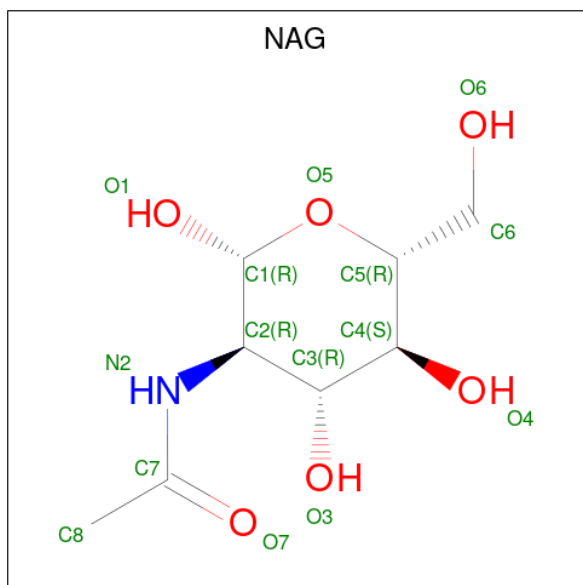
Mol	Chain	Residues	Atoms				AltConf
4	A	1	Total 14	C 8	N 1	O 5	0
4	A	1	Total 14	C 8	N 1	O 5	0
4	B	1	Total 14	C 8	N 1	O 5	0
4	B	1	Total 14	C 8	N 1	O 5	0
4	C	1	Total 14	C 8	N 1	O 5	0
4	C	1	Total 14	C 8	N 1	O 5	0

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: Glycoprotein B

Chain A:

• Molecule 1: Glycoprotein B

Chain B:

N141 Y142 V170 S171 Q172 V173 TRP PHE GLY HIS ARG TYR SER GLN PHE MET GLY I185 K212 Y213 V214 R215 N216 N217 L218 E219 T220 F223 H224 R225 D226 E229 D251 LEU LYS TYR ASN PRO SER ARG VAL GLU ALA PHE HIS ARG TYR GLY T267 V281 Y282 P283 M297

E305 T312 T332 K333 A334 R335 A336 T337 T347 F350 V363 C364 S378 R385 S473 ARG LYS PRO PRO ASN PRO THR PRO PRO PRO GLY ALA SER ALA ASN ALA SER VAL GLU ARG ILE LYS THR THR SER SER I501 R543 I550 A551 V555 G556

R557 R558 V559 V570 S571 V576 E619 N620 N621 D628 G644 F670 I671 H681 E682 F683 V684 Y689 T690 I694 K695 L700 D701 Y702 R707 R708 L711 R715 D718 I719 D720 T721 VAL ILE HIS ALA ASP ALA ASN GLY SER GLY TYR ILE PRO GLU

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

SER GLY GLY SER ALA TRP SER HIS PRO GLN PHE GLU LYS

● Molecule 1: Glycoprotein B

Chain C:

63%   6%   31%

MET HIS GLN GLY ALA PRO SER TRP GLY ARG ARG TRP PHE VAL VAL ALA LEU LEU GLY LEU THR LEU GLY VAL LEU VAL ALA SER ALA ALA PRO SER SER PRO GLY THR PRO GLY VAL ALA ALA THR GLN ALA ALA ASN GLY GLY PRO ALA THR PRO ALA PRO ALA LEU GLY

ALA ALA PRO THR GLY ASP LYS PRO LYS PRO LYS ASN LYS LYS PRO LYS ASN PRO THR PRO PRO ARG PRO ALA GLY ASP ASN ALA THR VAL ALA ALA GLY HIS ALA THR LEU ARG GLU GLU HIS LEU ARG ASP ILE LYS ALA GLU ASN T109 P119 T120 V124 V125 Q126 F127 R131

E138 V170 S171 Q172 V173 TRP PHE GLY HIS ARG TYR SER GLN PHE MET GLY I185 F186 E187 K212 Y213 V214 R215 N216 N217 L218 E219 T220 F223 H224 R225 D226 W247 D251 LEU LYS TYR ASN PRO SER ARG VAL GLU ALA PHE HIS ARG TYR GLY T267 V273 V281 Y282

P283 M297 E305 R318 A327 A334 R335 A336 L345 T365 V372 S378 R385 I391 L409 S473 ARG LYS PRO PRO ASN PRO THR PRO PRO PRO GLY ALA SER ALA ASN ALA SER VAL GLU ARG ILE LYS THR THR SER SER I501 Q514

N518 R543 I550 A551 S552 V555 V559 R562 E619 N620 N621 D628 P632 C633 R638 G644 Y647 T666 V667 F670 I671 M677 E682 Y689 T690 E693 I694 L700 D701 R707 R708 L711 R715 D718 I719 D720 T721 VAL ILE HIS ALA ASP ALA ASN GLY SER GLY TYR ILE PRO GLU ALA PRO ARG ASP GLY GLN ALA TYR VAL ARG LYS ASP GLY GLU TRP VAL LEU LEU SER THR PHE LEU GLY ARG SER LEU GLU VAL LEU PHE GLN GLY PRO GLY HIS HIS HIS HIS HIS HIS SER ALA TRP SER HIS

PRO GLN PHE GLU LYS GLY LYS GLY GLY SER GLY GLY GLY SER GLY GLY SER ALA TRP SER HIS PRO GLN PHE GLU LYS

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

Chain D:

50%   50%

NAG1 NAG2

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

Chain F:

NAG1
NAG2

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

Chain H:

NAG1
NAG2

• Molecule 3: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain E:

NAG1
NAG2
BMA3

• Molecule 3: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain G:

NAG1
NAG2
BMA3

• Molecule 3: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain I:

NAG1
NAG2
BMA3

4 Experimental information ⓘ

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	223040	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	NONE	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose $(e^-/\text{Å}^2)$	58	Depositor
Minimum defocus (nm)	800	Depositor
Maximum defocus (nm)	2000	Depositor
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	0.505	Depositor
Minimum map value	-0.247	Depositor
Average map value	0.001	Depositor
Map value standard deviation	0.011	Depositor
Recommended contour level	0.085	Depositor
Map size (Å)	318.72, 318.72, 318.72	wwPDB
Map dimensions	384, 384, 384	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.83, 0.83, 0.83	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	A	0.26	0/4616	0.55	2/6273 (0.0%)
1	B	0.28	0/4616	0.61	5/6273 (0.1%)
1	C	0.30	0/4616	0.57	4/6273 (0.1%)
All	All	0.28	0/13848	0.58	11/18819 (0.1%)

There are no bond length outliers.

All (11) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	B	142	TYR	N-CA-CB	15.76	134.38	109.95
1	B	142	TYR	CB-CA-C	-7.98	96.84	109.84
1	C	633	CYS	CB-CA-C	7.40	122.04	109.53
1	C	127	PHE	CB-CA-C	7.39	123.98	109.35
1	A	127	PHE	CB-CA-C	7.21	124.02	109.38
1	B	127	PHE	CB-CA-C	7.13	123.86	109.38
1	C	632	PRO	N-CA-C	-6.71	98.65	112.47
1	A	127	PHE	N-CA-CB	-6.37	99.72	111.13
1	B	141	ASN	CA-C-O	-5.94	115.08	122.03
1	B	127	PHE	N-CA-CB	-5.74	100.86	111.13
1	C	127	PHE	N-CA-CB	-5.21	101.57	111.00

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	4510	0	4325	32	0
1	B	4510	0	4325	32	0
1	C	4510	0	4325	35	0
2	D	28	0	25	0	0
2	F	28	0	25	0	0
2	H	28	0	25	0	0
3	E	39	0	34	0	0
3	G	39	0	34	0	0
3	I	39	0	34	0	0
4	A	28	0	26	1	0
4	B	28	0	26	0	0
4	C	28	0	26	0	0
All	All	13815	0	13230	87	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.

All (87) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:297:MET:HE2	1:B:312:THR:OG1	1.59	1.01
1:B:555:VAL:HG21	1:B:559:VAL:HG21	1.54	0.89
1:A:293:ASP:OD1	1:C:638:ARG:NH2	2.05	0.89
1:C:552:SER:HA	1:C:559:VAL:HG12	1.72	0.71
1:A:555:VAL:HG21	1:A:559:VAL:HG21	1.72	0.71
1:A:240:CYS:SG	1:A:607:CYS:N	2.66	0.68
1:B:720:ASP:OD1	1:C:715:ARG:NH2	2.27	0.68
1:A:607:CYS:SG	1:A:610:GLY:N	2.68	0.67
1:A:570:VAL:HG12	1:C:677:MET:HE3	1.79	0.65
1:C:711:LEU:O	1:C:715:ARG:HG2	1.99	0.62
1:B:701:ASP:OD1	1:B:702:TYR:N	2.33	0.62
1:A:240:CYS:SG	1:A:610:GLY:HA3	2.40	0.62
1:B:555:VAL:HG21	1:B:559:VAL:CG2	2.29	0.62
1:A:607:CYS:SG	1:A:610:GLY:CA	2.89	0.60
1:B:297:MET:CE	1:B:312:THR:OG1	2.43	0.60
1:A:607:CYS:SG	1:A:610:GLY:HA3	2.41	0.60
1:B:125:VAL:O	1:B:125:VAL:HG23	2.02	0.59
1:A:126:GLN:HE21	1:C:666:THR:HB	1.68	0.58
1:C:378:SER:O	1:C:385:ARG:N	2.36	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:378:SER:O	1:A:385:ARG:N	2.36	0.58
1:B:619:GLU:OE1	1:B:619:GLU:N	2.37	0.57
1:A:126:GLN:OE1	1:C:647:TYR:HE2	1.87	0.57
1:B:378:SER:O	1:B:385:ARG:N	2.37	0.57
1:C:125:VAL:O	1:C:125:VAL:HG23	2.06	0.56
1:A:619:GLU:N	1:A:619:GLU:OE2	2.38	0.56
1:B:281:VAL:HG23	1:B:283:PRO:HD2	1.89	0.55
1:A:187:GLU:HG2	1:C:690:THR:HG21	1.89	0.55
1:B:559:VAL:HG13	1:B:571:SER:O	2.07	0.54
1:C:127:PHE:HB2	1:C:543:ARG:CZ	2.37	0.54
1:A:701:ASP:OD2	1:A:702:TYR:N	2.41	0.54
1:C:327:ALA:O	1:C:336:ALA:N	2.41	0.54
1:B:138:GLU:OE1	1:B:138:GLU:N	2.38	0.53
1:C:551:ALA:O	1:C:555:VAL:HG22	2.09	0.53
1:B:690:THR:HG21	1:C:187:GLU:HG2	1.91	0.52
1:B:711:LEU:O	1:B:715:ARG:HG3	2.10	0.52
1:A:126:GLN:OE1	1:C:647:TYR:CE2	2.63	0.51
1:C:138:GLU:OE1	1:C:138:GLU:N	2.34	0.51
1:A:281:VAL:HG23	1:A:283:PRO:HD2	1.92	0.51
1:C:619:GLU:N	1:C:619:GLU:OE2	2.44	0.51
1:B:557:ARG:O	1:B:559:VAL:HG23	2.11	0.50
1:A:551:ALA:O	1:A:555:VAL:HG22	2.10	0.50
1:A:667:VAL:O	1:A:667:VAL:HG23	2.10	0.50
1:B:720:ASP:CG	1:C:715:ARG:HH22	2.20	0.49
1:B:125:VAL:HG22	1:B:570:VAL:CG2	2.42	0.49
1:A:709:ASN:OD1	1:A:709:ASN:N	2.45	0.49
1:C:281:VAL:HG23	1:C:283:PRO:HD2	1.93	0.48
1:A:711:LEU:O	1:A:715:ARG:HG3	2.12	0.48
1:B:347:THR:OG1	1:B:350:PHE:O	2.21	0.48
1:A:127:PHE:CZ	1:A:563:MET:HE1	2.49	0.48
1:C:124:VAL:O	1:C:124:VAL:HG23	2.14	0.47
1:B:551:ALA:O	1:B:555:VAL:HG22	2.14	0.47
1:A:673:LEU:CD1	4:A:902:NAG:O7	2.63	0.47
1:C:543:ARG:CG	1:C:550:ILE:HG21	2.45	0.47
1:B:332:THR:O	1:B:333:LYS:C	2.58	0.46
1:A:297:MET:HE1	1:A:345:LEU:HD23	1.97	0.46
1:A:555:VAL:HG21	1:A:559:VAL:CG2	2.41	0.46
1:B:170:VAL:HG12	1:B:172:GLN:H	1.81	0.46
1:A:136:ARG:NH2	1:A:137:PRO:O	2.49	0.45
1:C:131:ARG:HH11	1:C:131:ARG:HG3	1.81	0.45
1:A:347:THR:OG1	1:A:350:PHE:O	2.28	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:621:ASN:OD1	1:C:644:GLY:N	2.49	0.45
1:A:238:ASN:ND2	1:A:240:CYS:O	2.50	0.45
1:C:514:GLN:NE2	1:C:518:ASN:OD1	2.49	0.45
1:A:363:VAL:HG22	1:A:364:CYS:H	1.83	0.44
1:C:119:PRO:O	1:C:562:ARG:NH2	2.51	0.44
1:B:543:ARG:CG	1:B:550:ILE:HG21	2.48	0.44
1:B:694:ILE:HD12	1:B:695:LYS:H	1.81	0.44
1:A:543:ARG:CG	1:A:550:ILE:HG21	2.48	0.43
1:A:318:ARG:O	1:A:345:LEU:HD22	2.18	0.43
1:C:543:ARG:HG2	1:C:550:ILE:HG21	1.99	0.43
1:A:681:HIS:O	1:B:120:THR:HG21	2.18	0.43
1:B:127:PHE:HB2	1:B:543:ARG:CZ	2.49	0.42
1:B:363:VAL:HG22	1:B:364:CYS:H	1.85	0.42
1:C:365:THR:HG22	1:C:409:LEU:HD11	2.01	0.42
1:B:113:PHE:HB2	1:B:576:VAL:HG13	2.02	0.42
1:C:372:VAL:HG22	1:C:391:ILE:HD11	2.02	0.42
1:B:558:ARG:C	1:B:559:VAL:HG23	2.44	0.41
1:C:297:MET:HE1	1:C:345:LEU:HD23	2.02	0.41
1:B:684:VAL:HG23	1:B:695:LYS:HD3	2.01	0.41
1:C:667:VAL:O	1:C:667:VAL:HG23	2.21	0.41
1:B:681:HIS:O	1:C:120:THR:HG21	2.20	0.41
1:C:170:VAL:HG12	1:C:172:GLN:H	1.85	0.41
1:C:318:ARG:O	1:C:345:LEU:HD22	2.21	0.41
1:B:621:ASN:OD1	1:B:644:GLY:N	2.52	0.40
1:B:335:ARG:HD2	1:B:335:ARG:HA	1.95	0.40
1:C:247:TRP:N	1:C:273:VAL:O	2.54	0.40
1:A:570:VAL:HG12	1:C:677:MET:CE	2.50	0.40

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	552/808 (68%)	531 (96%)	21 (4%)	0	100	100
1	B	552/808 (68%)	522 (95%)	30 (5%)	0	100	100
1	C	552/808 (68%)	527 (96%)	25 (4%)	0	100	100
All	All	1656/2424 (68%)	1580 (95%)	76 (5%)	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	489/674 (73%)	489 (100%)	0	100	100
1	B	489/674 (73%)	489 (100%)	0	100	100
1	C	489/674 (73%)	489 (100%)	0	100	100
All	All	1467/2022 (73%)	1467 (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 (7) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	129	GLN
1	A	580	ASN
1	B	129	GLN
1	B	580	ASN
1	C	129	GLN
1	C	202	ASN
1	C	580	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 ⓘ

15 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	D	1	1,2	14,14,15	0.74	0	17,19,21	1.10	2 (11%)
2	NAG	D	2	2	14,14,15	0.70	0	17,19,21	0.97	0
3	NAG	E	1	3,1	14,14,15	0.74	0	17,19,21	0.84	0
3	NAG	E	2	3	14,14,15	0.72	0	17,19,21	0.80	0
3	BMA	E	3	3	11,11,12	0.83	0	15,15,17	2.59	6 (40%)
2	NAG	F	1	1,2	14,14,15	0.74	0	17,19,21	1.06	1 (5%)
2	NAG	F	2	2	14,14,15	0.69	0	17,19,21	0.98	0
3	NAG	G	1	3,1	14,14,15	0.74	0	17,19,21	0.89	0
3	NAG	G	2	3	14,14,15	0.71	0	17,19,21	0.82	0
3	BMA	G	3	3	11,11,12	0.83	0	15,15,17	2.65	6 (40%)
2	NAG	H	1	1,2	14,14,15	0.73	0	17,19,21	1.04	1 (5%)
2	NAG	H	2	2	14,14,15	0.69	0	17,19,21	0.97	0
3	NAG	I	1	3,1	14,14,15	0.74	0	17,19,21	0.86	0
3	NAG	I	2	3	14,14,15	0.72	0	17,19,21	0.78	0
3	BMA	I	3	3	11,11,12	0.83	0	15,15,17	2.62	6 (40%)

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	D	1	1,2	-	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	-	0/6/23/26	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	NAG	E	2	3	-	0/6/23/26	0/1/1/1
3	BMA	E	3	3	-	0/2/19/22	0/1/1/1
2	NAG	F	1	1,2	-	0/6/23/26	0/1/1/1
2	NAG	F	2	2	-	2/6/23/26	0/1/1/1
3	NAG	G	1	3,1	-	0/6/23/26	0/1/1/1
3	NAG	G	2	3	-	0/6/23/26	0/1/1/1
3	BMA	G	3	3	-	0/2/19/22	0/1/1/1
2	NAG	H	1	1,2	-	0/6/23/26	0/1/1/1
2	NAG	H	2	2	-	2/6/23/26	0/1/1/1
3	NAG	I	1	3,1	-	0/6/23/26	0/1/1/1
3	NAG	I	2	3	-	0/6/23/26	0/1/1/1
3	BMA	I	3	3	-	0/2/19/22	0/1/1/1

There are no bond length outliers.

All (22) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	G	3	BMA	C1-O5-C5	7.76	122.58	112.19
3	I	3	BMA	C1-O5-C5	7.63	122.41	112.19
3	E	3	BMA	C1-O5-C5	7.54	122.29	112.19
3	I	3	BMA	C3-C4-C5	3.77	117.07	110.23
3	E	3	BMA	C3-C4-C5	3.76	117.06	110.23
3	G	3	BMA	C3-C4-C5	3.75	117.03	110.23
3	G	3	BMA	C2-C3-C4	2.96	116.07	110.86
3	I	3	BMA	C2-C3-C4	2.94	116.04	110.86
3	E	3	BMA	C2-C3-C4	2.93	116.01	110.86
3	G	3	BMA	O4-C4-C3	-2.36	104.81	110.38
3	E	3	BMA	O4-C4-C3	-2.30	104.96	110.38
3	I	3	BMA	O4-C4-C3	-2.28	104.99	110.38
3	I	3	BMA	O5-C5-C4	2.27	116.35	110.83
3	E	3	BMA	O5-C5-C4	2.25	116.29	110.83
3	G	3	BMA	O3-C3-C2	-2.23	105.49	110.05
3	G	3	BMA	O5-C5-C4	2.23	116.26	110.83
2	H	1	NAG	C2-N2-C7	2.21	125.86	122.90
3	E	3	BMA	O3-C3-C2	-2.20	105.56	110.05
3	I	3	BMA	O3-C3-C2	-2.19	105.58	110.05
2	D	1	NAG	O4-C4-C3	-2.19	105.22	110.38
2	F	1	NAG	C2-N2-C7	2.19	125.83	122.90
2	D	1	NAG	C2-N2-C7	2.17	125.80	122.90

There are no chirality outliers.

All (6) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	D	2	NAG	C1-C2-N2-C7
2	F	2	NAG	C1-C2-N2-C7
2	H	2	NAG	C1-C2-N2-C7
2	D	2	NAG	C3-C2-N2-C7
2	F	2	NAG	C3-C2-N2-C7
2	H	2	NAG	C3-C2-N2-C7

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 F

Bond lengths

Bond angles

Torsions

Rings

Oligosaccharide Chain H

Bond lengths

Bond angles

Torsions

Rings

Oligosaccharide Chain E

Bond lengths

Bond angles

Torsions

Rings

Oligosaccharide Chain G

Bond lengths

Bond angles

Torsions

Rings

Oligosaccharide Chain I

Bond lengths

Bond angles

Torsions

Rings

5.6 Ligand geometry ⓘ

6 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	#$\|Z\| > 2$
4	NAG	A	901	1	14,14,15	0.69	0	17,19,21	0.85	0
4	NAG	B	902	1	14,14,15	0.72	0	17,19,21	0.86	0
4	NAG	B	901	1	14,14,15	0.69	0	17,19,21	0.89	0
4	NAG	A	902	1	14,14,15	0.71	0	17,19,21	0.86	0
4	NAG	C	902	1	14,14,15	0.72	0	17,19,21	0.84	0
4	NAG	C	901	1	14,14,15	0.71	0	17,19,21	0.85	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	901	1	-	0/6/23/26	0/1/1/1
4	NAG	B	902	1	-	0/6/23/26	0/1/1/1
4	NAG	B	901	1	-	0/6/23/26	0/1/1/1
4	NAG	A	902	1	-	0/6/23/26	0/1/1/1
4	NAG	C	902	1	-	0/6/23/26	0/1/1/1
4	NAG	C	901	1	-	0/6/23/26	0/1/1/1

There are no bond length outliers.

There are no bond angle outliers.

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
4	A	902	NAG	1	0

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 (i)

This section contains visualisations of the EMDB entry EMD-46762. 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
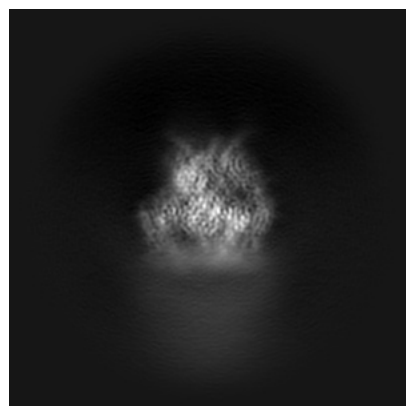
X
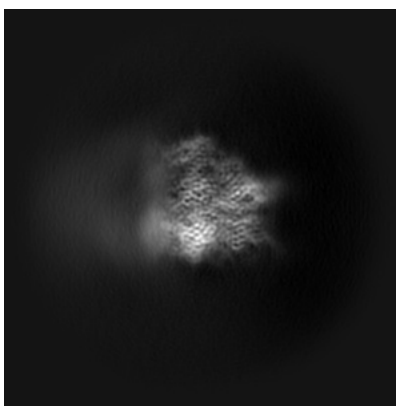
Y
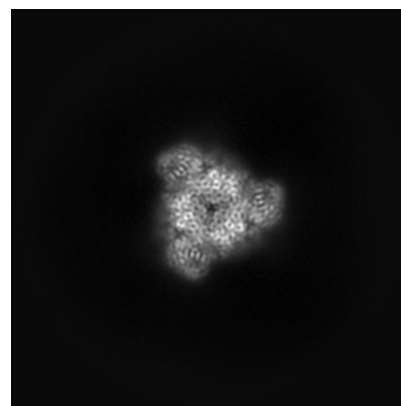
Z

6.1.2 Raw map

X

Y

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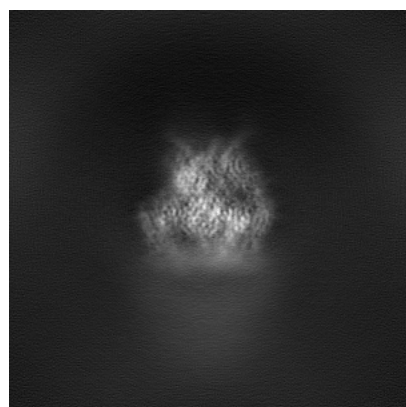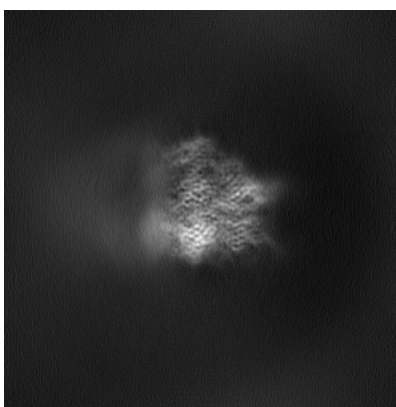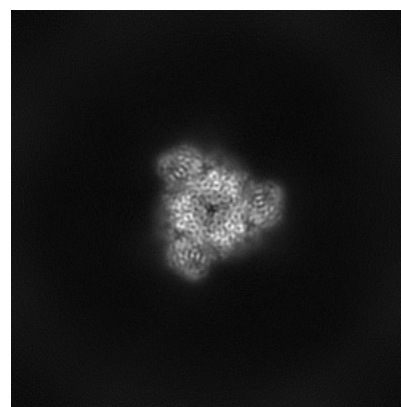
The images above show the map projected in three orthogonal directions.

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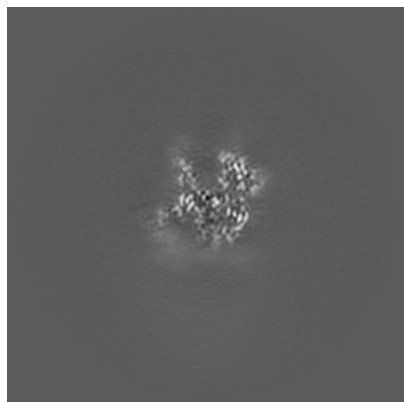
6.2.1 Primary map
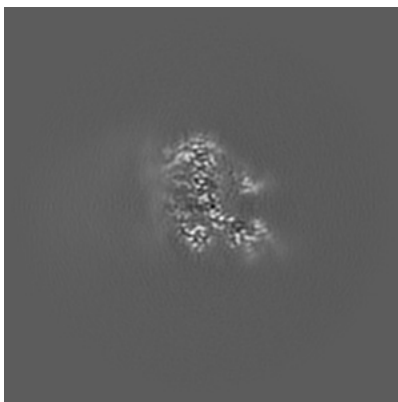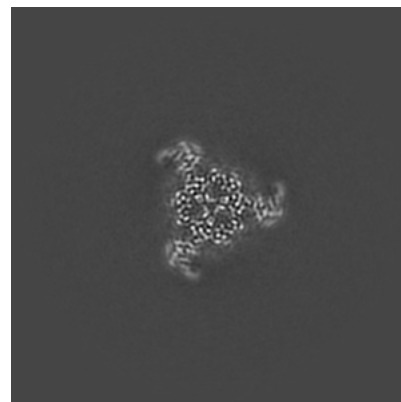
X Index: 192	Y Index: 192	Z Index: 192

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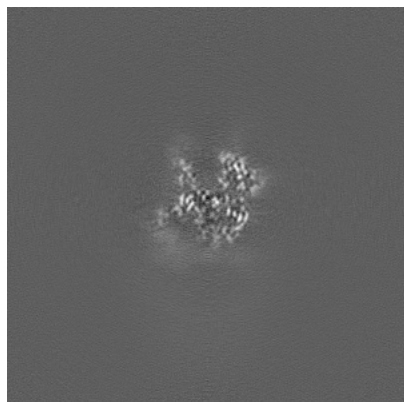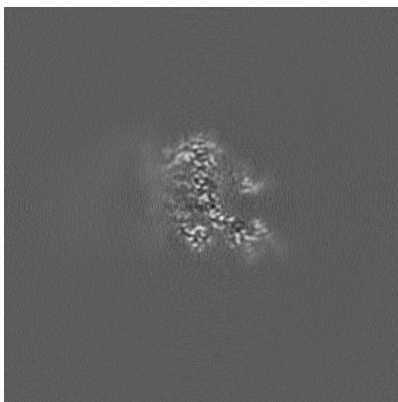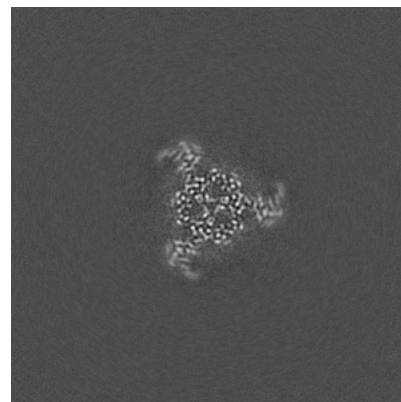
X Index: 192	Y Index: 192	Z Index: 192

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

6.3 Largest variance slices (i)

6.3.1 Primary map
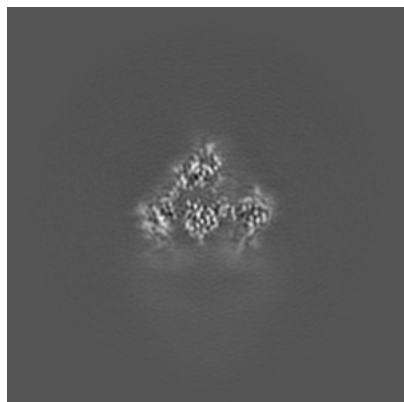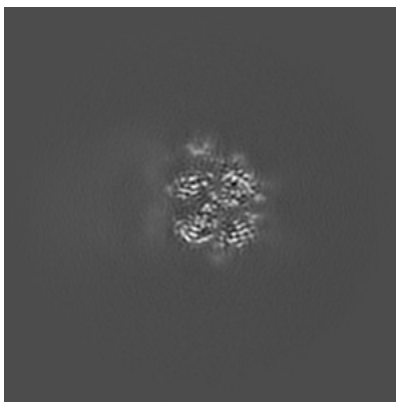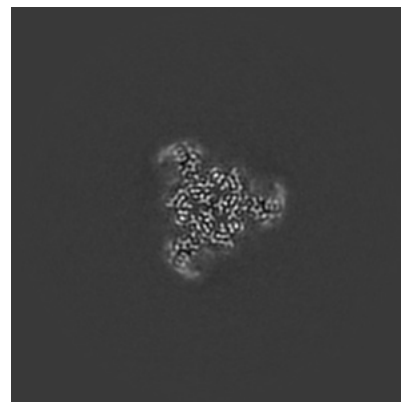
X Index: 168	Y Index: 177	Z Index: 189

6.3.2 Raw map
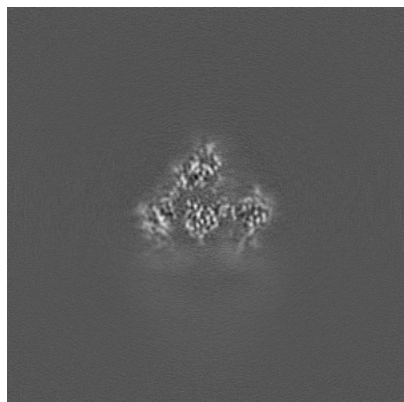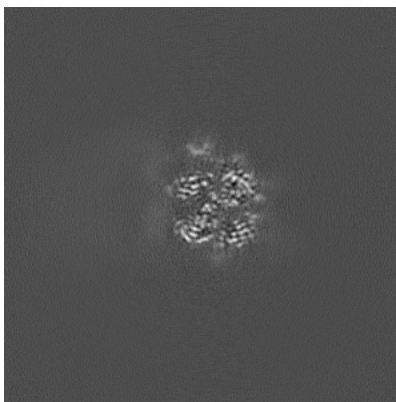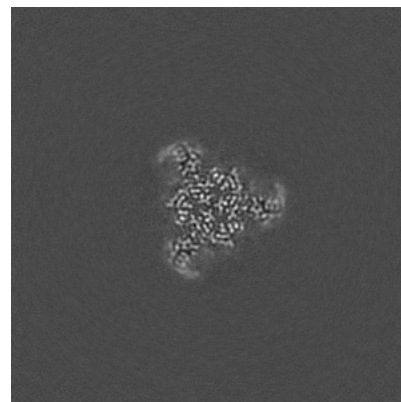
X Index: 168	Y Index: 177	Z Index: 189

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
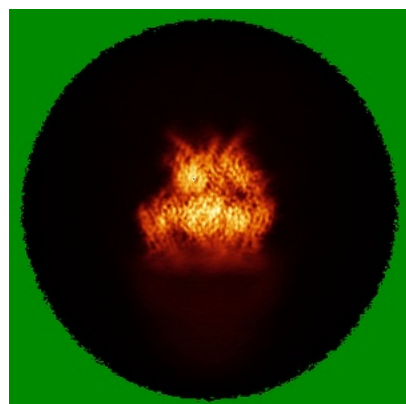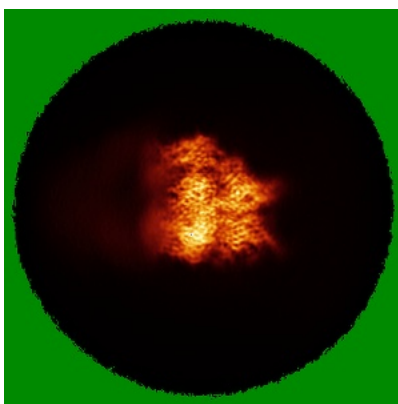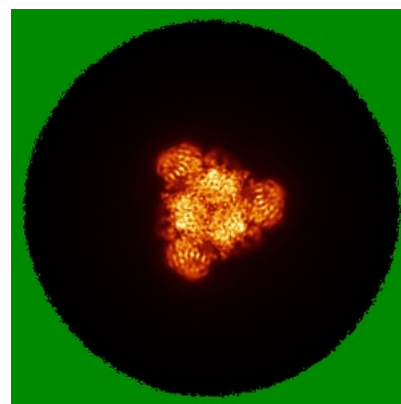
X   Y   Z

6.4.2 Raw map

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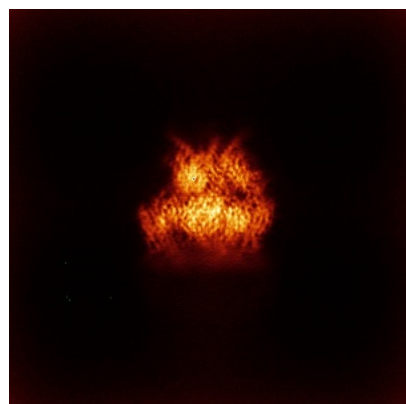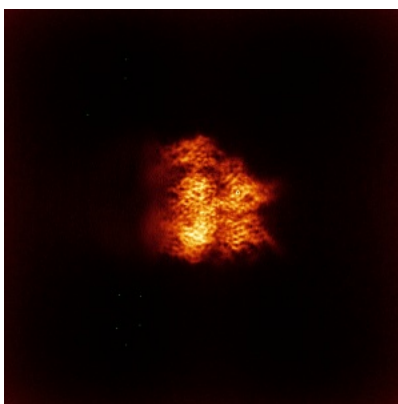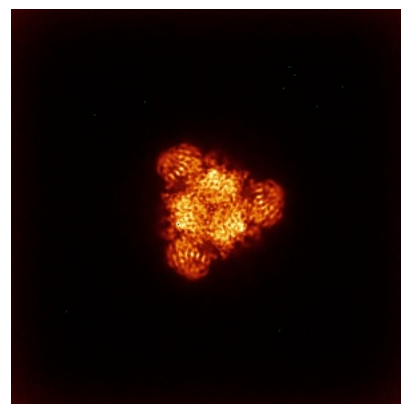
The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

6.5 Orthogonal surface views (i)

6.5.1 Primary map

| X | Y | Z |
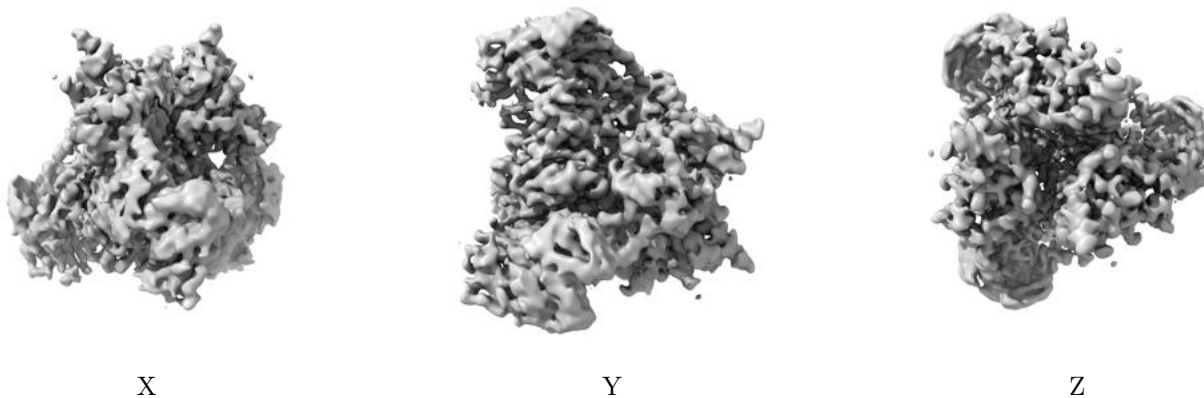
The images above show the 3D surface view of the map at the recommended contour level 0.085. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map

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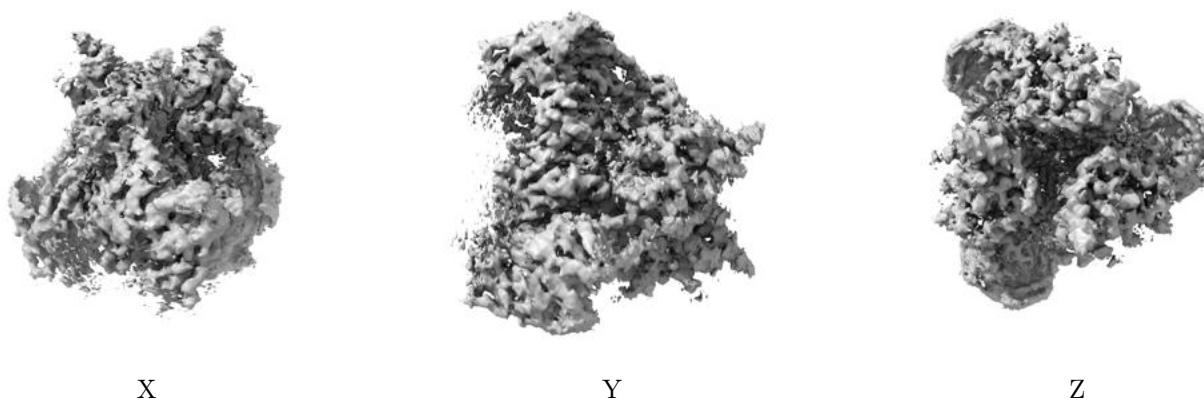
These images show the 3D surface of the raw map. The raw map's contour level was selected so that its surface encloses the same volume as the primary map does at its recommended contour level.

6.6 Mask visualisation (i)

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

7 Map analysis (i)

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

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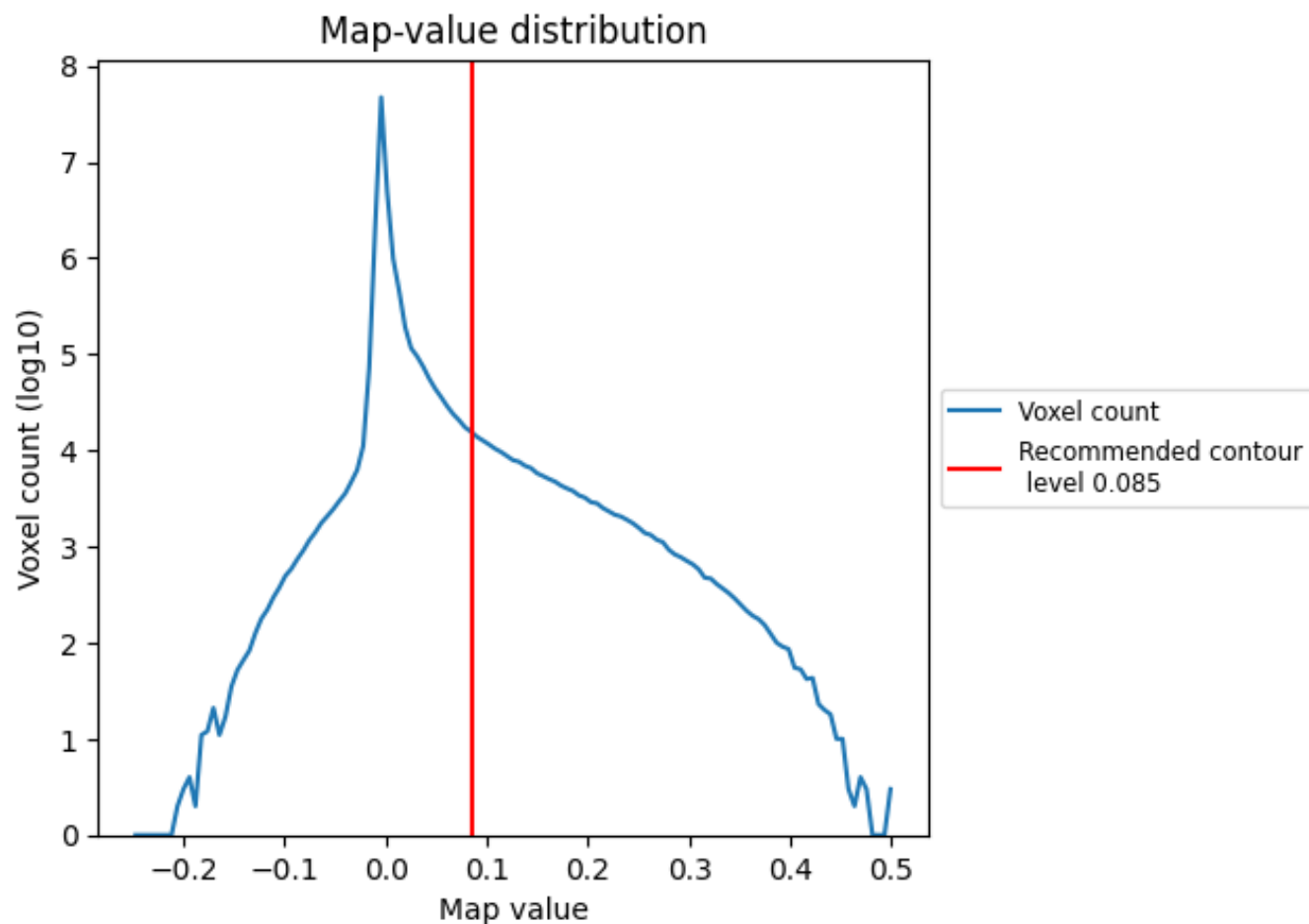
The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

7.2 Volume estimate ⓘ
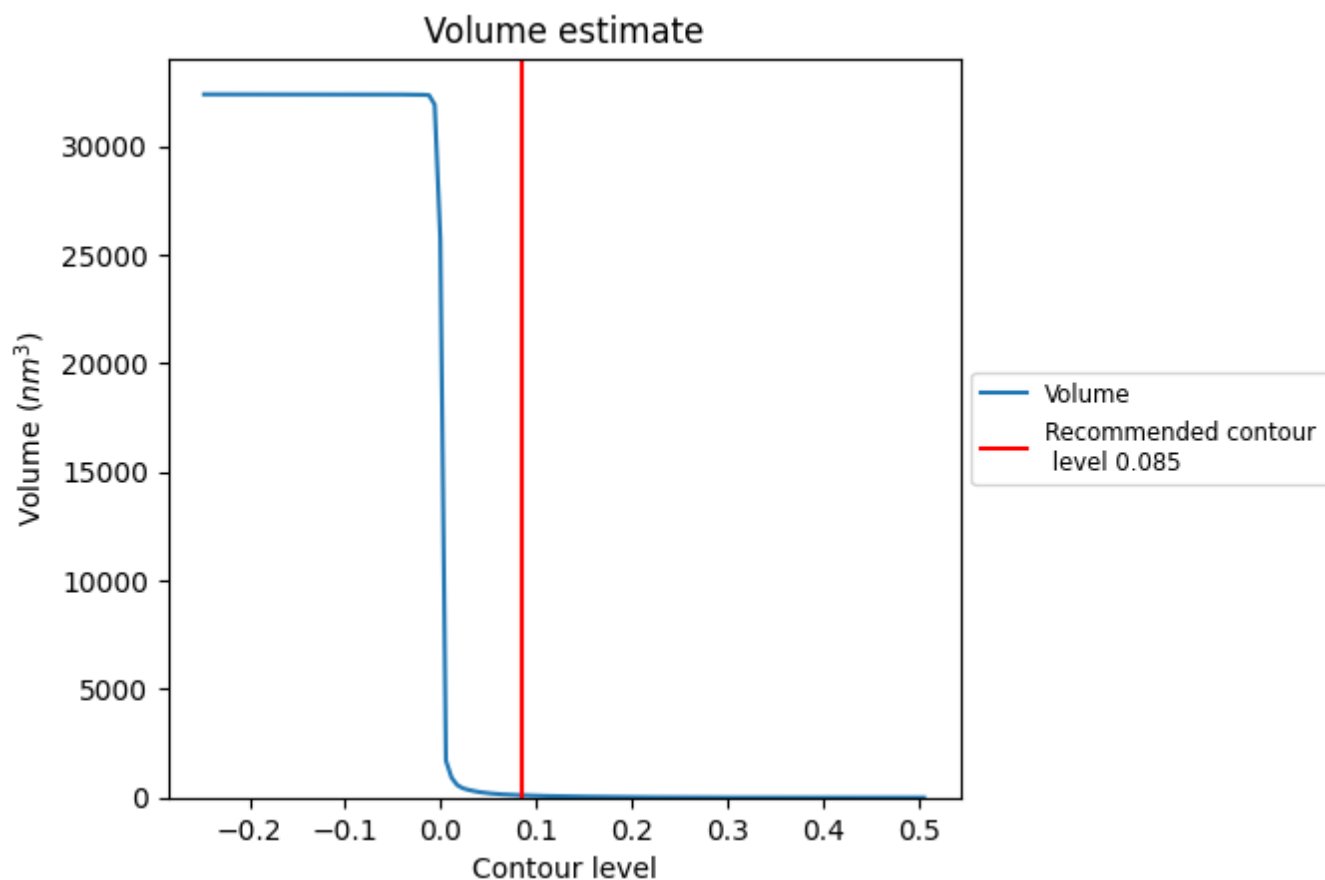
The volume at the recommended contour level is 105 nm^3; this corresponds to an approximate mass of 95 kDa.

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 ⓘ
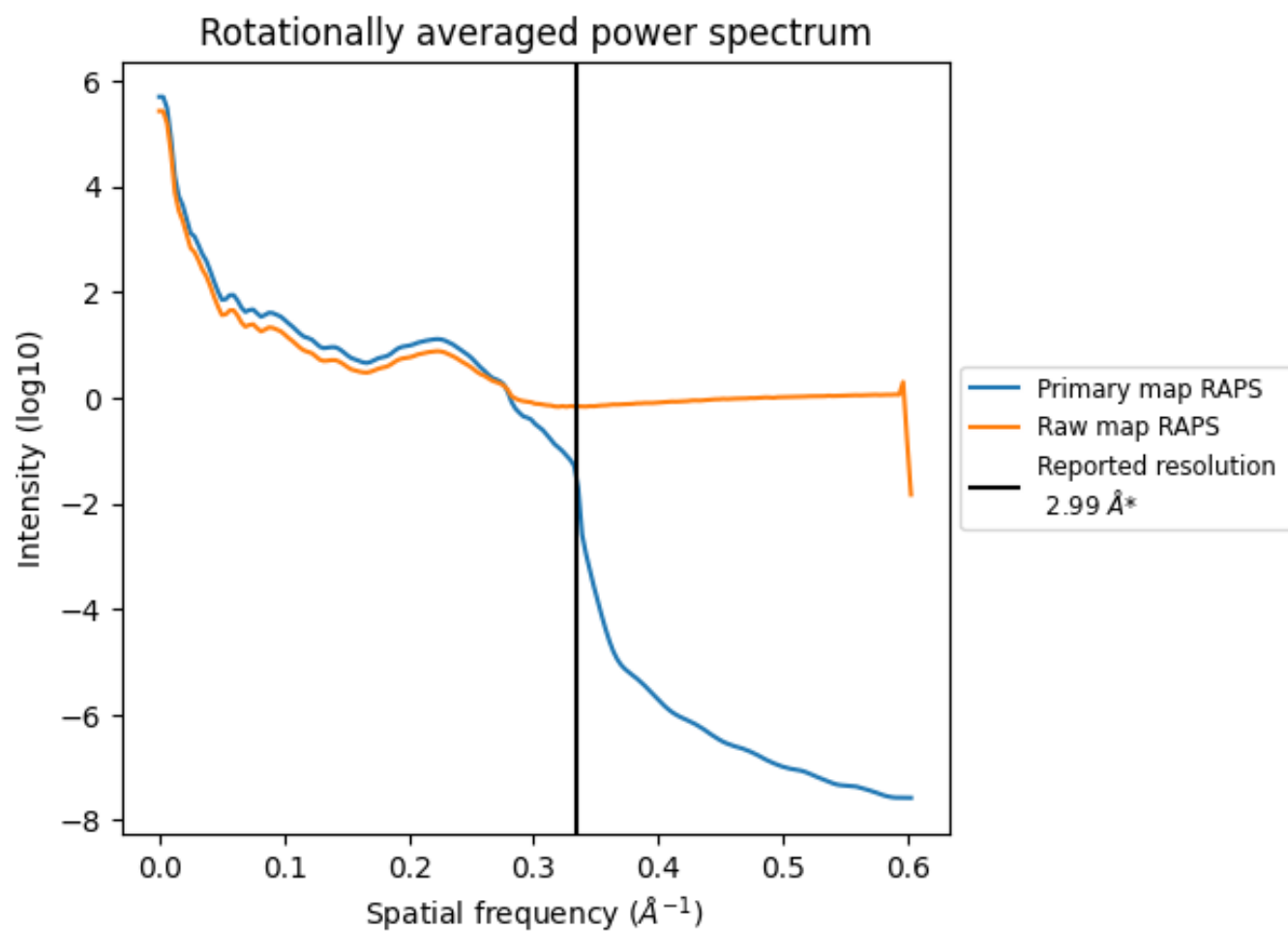
*Reported resolution corresponds to spatial frequency of 0.334 Å^{-1}

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 ⓘ
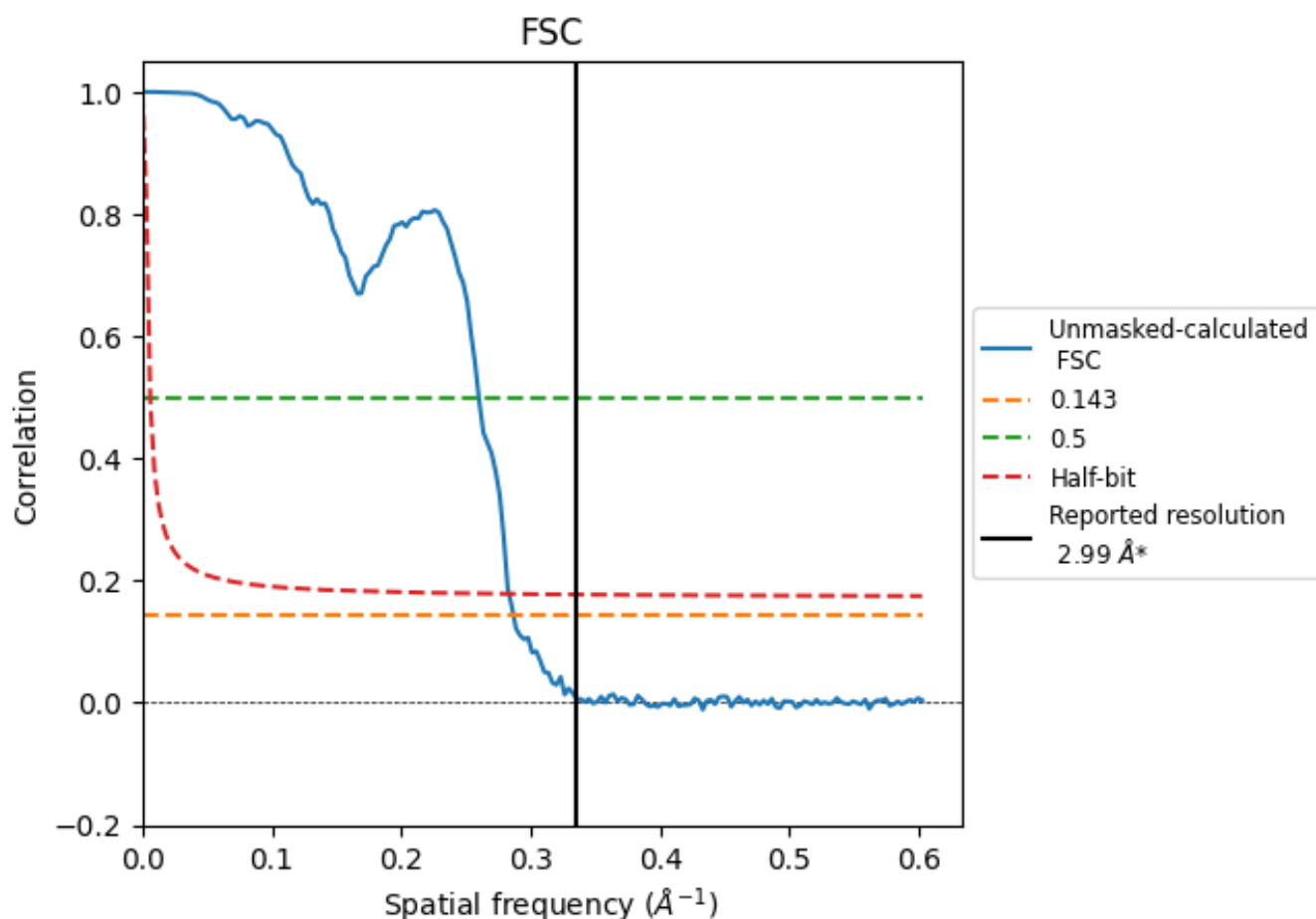
*Reported resolution corresponds to spatial frequency of 0.334 Å^{-1}

8.2 Resolution estimates (i)

Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.99	-	-
Author-provided FSC curve	-	-	-
Unmasked-calculated*	3.49	3.85	3.53

*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 3.49 differs from the reported value 2.99 by more than 10 %

9 Map-model fit ⓘ

This section contains information regarding the fit between EMDB map EMD-46762 and PDB model 9DDA. Per-residue inclusion information can be found in section 3 on page 12.

9.1 Map-model overlay ⓘ


X　　　　　　　　　　　Y　　　　　　　　　　　Z
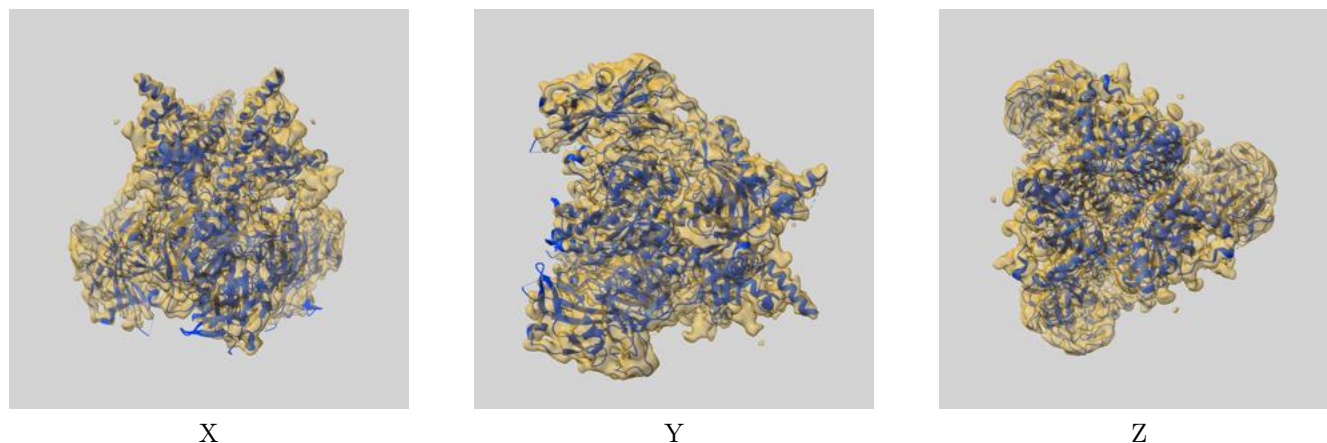
The images above show the 3D surface view of the map at the recommended contour level 0.085 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

## 9.2　Q-score mapped to coordinate model ⓘ

X　　　　　　　　　　Y　　　　　　　　　　Z
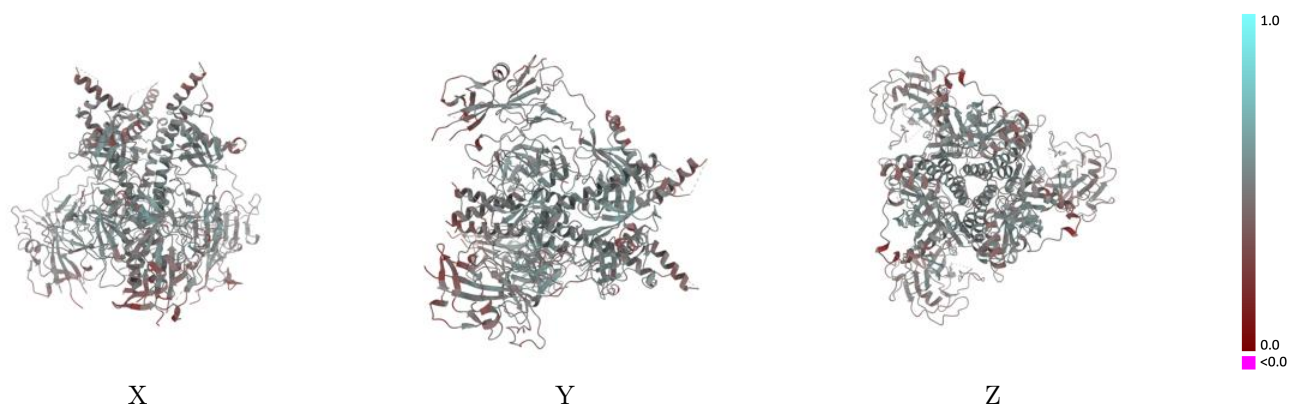
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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
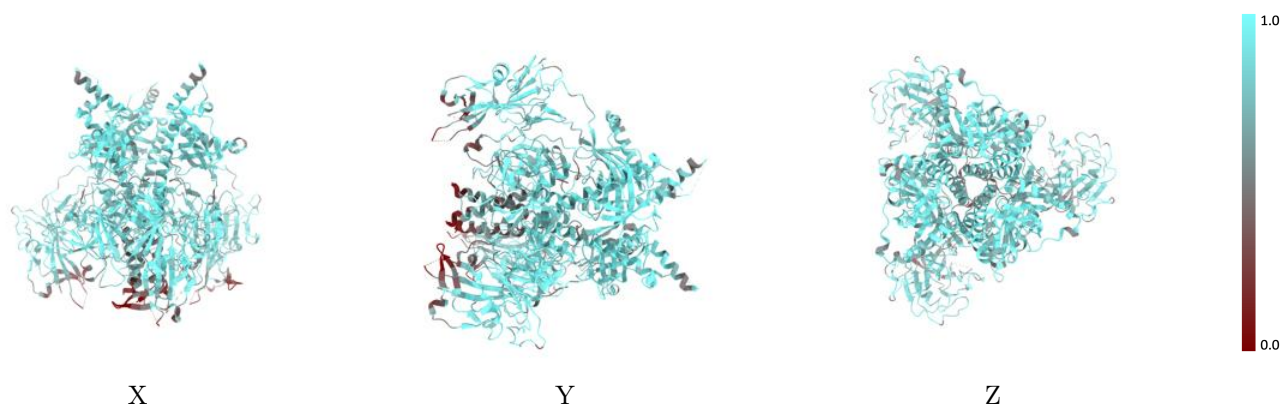
The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.085).

9.4　Atom inclusion ⓘ
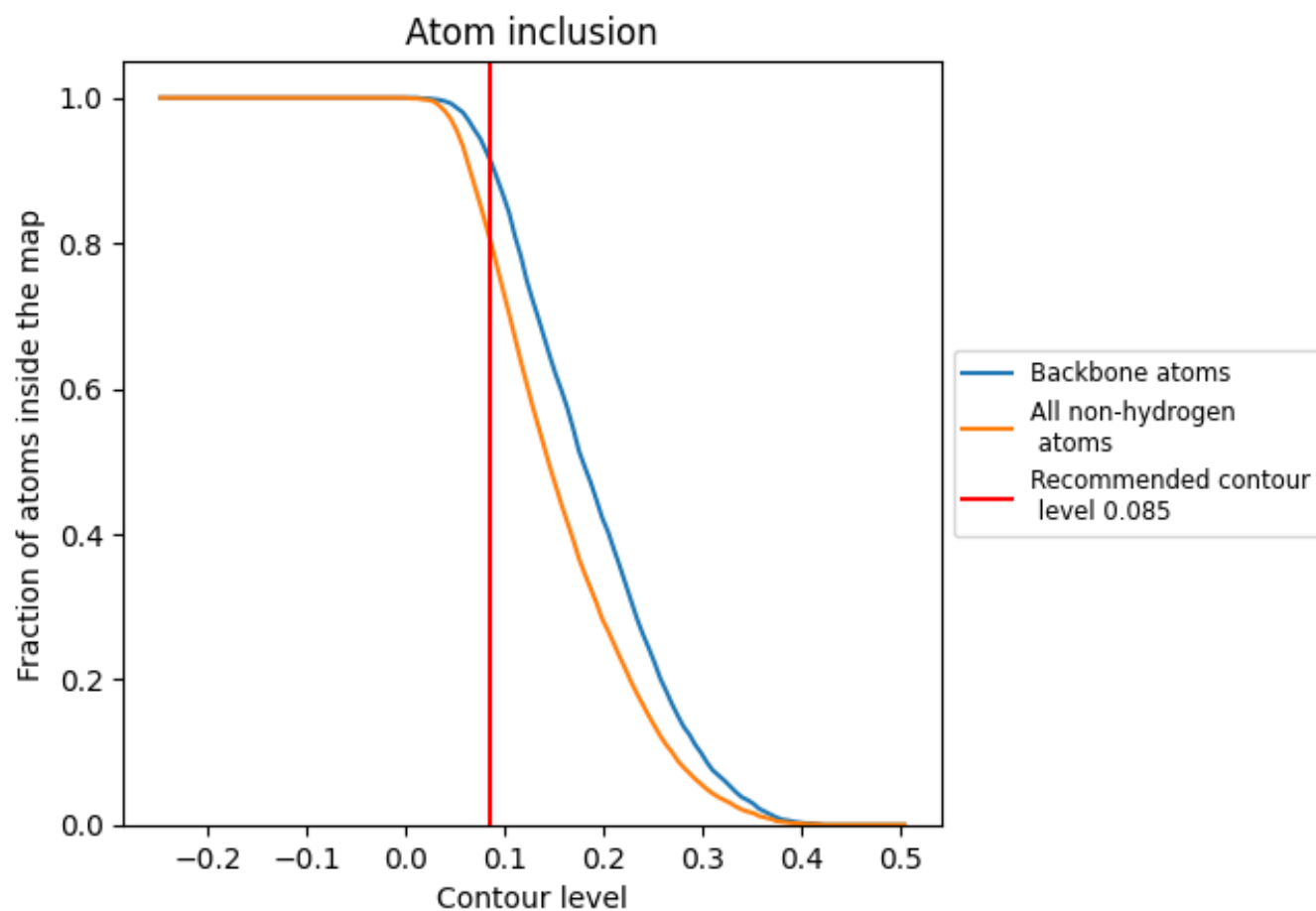
At the recommended contour level, 92% of all backbone atoms, 81% of all non-hydrogen atoms, are inside the map.

9.5　Map-model fit summary ⓘ

The table lists the average atom inclusion at the recommended contour level (0.085) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.8080	0.4670
A	0.8130	0.4680
B	0.8090	0.4680
C	0.8100	0.4670
D	0.8210	0.4440
E	0.5130	0.3650
F	0.7500	0.4030
G	0.5380	0.3520
H	0.8210	0.4310
I	0.5130	0.3870

1.0

0.0
<0.0