WORLDWIDE wwPDB PROTEIN DATA BANK

Full wwPDB EM Validation Report ⓘ

May 19, 2025 – 03:30 PM EDT

PDB ID	:	9MSD / pdb_00009msd
EMDB ID	:	EMD-48575
Title	:	G002-293-0536 Fab in complex with 001428_T278M_L14 SOSIP and RM20A3 Fab
Authors	:	Phulera, S.; Ozorowski, G.; Ward, A.B.
Deposited on	:	2025-01-09
Resolution	:	3.20 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 ⓘ 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.dev118
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)	:	2.43.1

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 3.20 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		1
Ramachandran outliers		0
Sidechain outliers		0.6%

Worse *Better*

■ Percentile relative to all structures

▯ Percentile relative to all EM structures
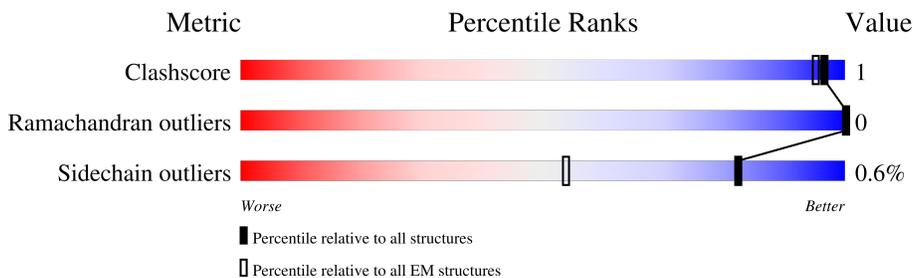
Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	210492	15764
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415

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	650	83% · 14%
1	B	650	83% · 14%
1	G	650	83% · 14%
2	H	224	5% 52% · 46%
2	I	224	5% 52% · 46%
2	N	224	5% 52% · 46%
3	L	210	15% 47% · 52%
3	M	210	15% 47% · 52%

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Mol	Chain	Length	Quality of chain
3	O	210	15% 47% 52%
4	D	215	49% 49%
4	F	215	49% 49%
4	K	215	49% 49%
5	C	228	54% 46%
5	E	228	54% 46%
5	J	228	54% 46%
6	P	2	50% 50%
6	Q	2	100%
6	S	2	50% 50%
6	T	2	100%
6	V	2	50% 50%
6	W	2	100%
7	R	3	100%
7	U	3	100%
7	X	3	100%
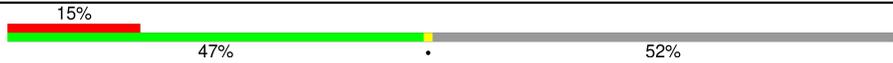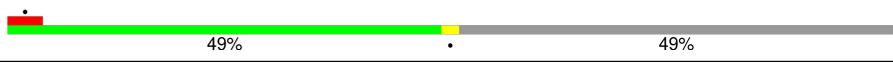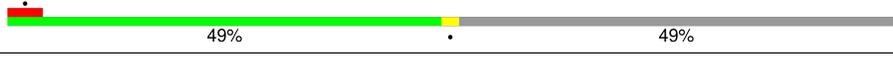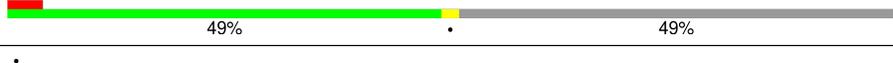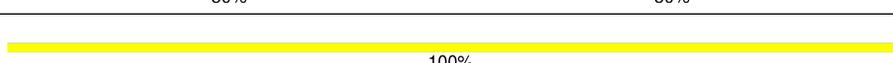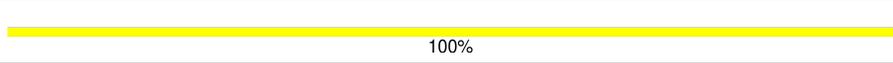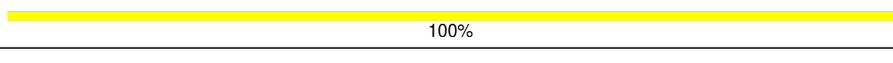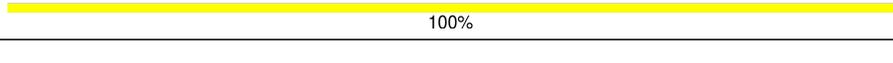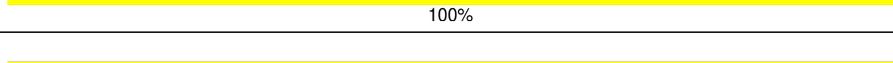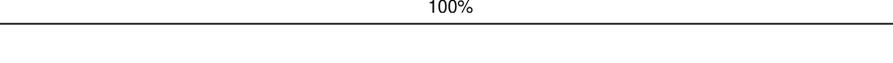
2 Entry composition ⓘ

There are 8 unique types of molecules in this entry. The entry contains 24285 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 001428_T278M_L14 SOSIP gp140.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	558	Total 4399	C 2763	N 766	O 833	S 37	0	0
1	G	558	Total 4399	C 2763	N 766	O 833	S 37	0	0
1	B	558	Total 4399	C 2763	N 766	O 833	S 37	0	0

There are 84 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	28	GLU	-	expression tag	UNP A1EAH9
A	29	THR	-	expression tag	UNP A1EAH9
A	278	MET	THR	engineered mutation	UNP A1EAH9
A	304	VAL	ARG	engineered mutation	UNP A1EAH9
A	319	TYR	ALA	engineered mutation	UNP A1EAH9
A	501	CYS	ALA	engineered mutation	UNP A1EAH9
A	504C	GLY	GLU	engineered mutation	UNP A1EAH9
A	504D	SER	ARG	engineered mutation	UNP A1EAH9
A	504E	HIS	GLU	engineered mutation	UNP A1EAH9
A	504F	SER	LYS	engineered mutation	UNP A1EAH9
A	504G	GLY	-	insertion	UNP A1EAH9
A	504H	SER	-	insertion	UNP A1EAH9
A	504I	GLY	-	insertion	UNP A1EAH9
A	504J	GLY	-	insertion	UNP A1EAH9
A	504K	SER	-	insertion	UNP A1EAH9
A	504L	GLY	-	insertion	UNP A1EAH9
A	504M	SER	-	insertion	UNP A1EAH9
A	504N	GLY	-	insertion	UNP A1EAH9
A	504O	GLY	-	insertion	UNP A1EAH9
A	504P	HIS	-	insertion	UNP A1EAH9
A	504Q	ALA	ARG	engineered mutation	UNP A1EAH9
A	504Y	SER	PHE	engineered mutation	UNP A1EAH9
A	559	PRO	ILE	engineered mutation	UNP A1EAH9
A	561	PRO	ALA	engineered mutation	UNP A1EAH9

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Chain	Residue	Modelled	Actual	Comment	Reference
A	568	ASP	LEU	engineered mutation	UNP A1EAH9
A	570	HIS	VAL	engineered mutation	UNP A1EAH9
A	585	HIS	ARG	engineered mutation	UNP A1EAH9
A	605	CYS	THR	engineered mutation	UNP A1EAH9
G	28	GLU	-	expression tag	UNP A1EAH9
G	29	THR	-	expression tag	UNP A1EAH9
G	278	MET	THR	engineered mutation	UNP A1EAH9
G	304	VAL	ARG	engineered mutation	UNP A1EAH9
G	319	TYR	ALA	engineered mutation	UNP A1EAH9
G	501	CYS	ALA	engineered mutation	UNP A1EAH9
G	504C	GLY	GLU	engineered mutation	UNP A1EAH9
G	504D	SER	ARG	engineered mutation	UNP A1EAH9
G	504E	HIS	GLU	engineered mutation	UNP A1EAH9
G	504F	SER	LYS	engineered mutation	UNP A1EAH9
G	504G	GLY	-	insertion	UNP A1EAH9
G	504H	SER	-	insertion	UNP A1EAH9
G	504I	GLY	-	insertion	UNP A1EAH9
G	504J	GLY	-	insertion	UNP A1EAH9
G	504K	SER	-	insertion	UNP A1EAH9
G	504L	GLY	-	insertion	UNP A1EAH9
G	504M	SER	-	insertion	UNP A1EAH9
G	504N	GLY	-	insertion	UNP A1EAH9
G	504O	GLY	-	insertion	UNP A1EAH9
G	504P	HIS	-	insertion	UNP A1EAH9
G	504Q	ALA	ARG	engineered mutation	UNP A1EAH9
G	504Y	SER	PHE	engineered mutation	UNP A1EAH9
G	559	PRO	ILE	engineered mutation	UNP A1EAH9
G	561	PRO	ALA	engineered mutation	UNP A1EAH9
G	568	ASP	LEU	engineered mutation	UNP A1EAH9
G	570	HIS	VAL	engineered mutation	UNP A1EAH9
G	585	HIS	ARG	engineered mutation	UNP A1EAH9
G	605	CYS	THR	engineered mutation	UNP A1EAH9
B	28	GLU	-	expression tag	UNP A1EAH9
B	29	THR	-	expression tag	UNP A1EAH9
B	278	MET	THR	engineered mutation	UNP A1EAH9
B	304	VAL	ARG	engineered mutation	UNP A1EAH9
B	319	TYR	ALA	engineered mutation	UNP A1EAH9
B	501	CYS	ALA	engineered mutation	UNP A1EAH9
B	504C	GLY	GLU	engineered mutation	UNP A1EAH9
B	504D	SER	ARG	engineered mutation	UNP A1EAH9
B	504E	HIS	GLU	engineered mutation	UNP A1EAH9
B	504F	SER	LYS	engineered mutation	UNP A1EAH9

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Chain	Residue	Modelled	Actual	Comment	Reference
B	504G	GLY	-	insertion	UNP A1EAH9
B	504H	SER	-	insertion	UNP A1EAH9
B	504I	GLY	-	insertion	UNP A1EAH9
B	504J	GLY	-	insertion	UNP A1EAH9
B	504K	SER	-	insertion	UNP A1EAH9
B	504L	GLY	-	insertion	UNP A1EAH9
B	504M	SER	-	insertion	UNP A1EAH9
B	504N	GLY	-	insertion	UNP A1EAH9
B	504O	GLY	-	insertion	UNP A1EAH9
B	504P	HIS	-	insertion	UNP A1EAH9
B	504Q	ALA	ARG	engineered mutation	UNP A1EAH9
B	504Y	SER	PHE	engineered mutation	UNP A1EAH9
B	559	PRO	ILE	engineered mutation	UNP A1EAH9
B	561	PRO	ALA	engineered mutation	UNP A1EAH9
B	568	ASP	LEU	engineered mutation	UNP A1EAH9
B	570	HIS	VAL	engineered mutation	UNP A1EAH9
B	585	HIS	ARG	engineered mutation	UNP A1EAH9
B	605	CYS	THR	engineered mutation	UNP A1EAH9

- Molecule 2 is a protein called G002-293-0536 Fab heavy chain.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	H	121	Total	C	N	O	S	0	0
			961	613	170	173	5		
2	I	121	Total	C	N	O	S	0	0
			961	613	170	173	5		
2	N	121	Total	C	N	O	S	0	0
			961	613	170	173	5		

- Molecule 3 is a protein called G002-293-0536 Fab light chain.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	L	100	Total	C	N	O	S	0	0
			760	479	123	155	3		
3	M	100	Total	C	N	O	S	0	0
			760	479	123	155	3		
3	O	100	Total	C	N	O	S	0	0
			760	479	123	155	3		

- Molecule 4 is a protein called RM20A3 Fab light chain.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	D	109	Total 811	C 505	N 136	O 167	S 3	0	0
4	F	109	Total 811	C 505	N 136	O 167	S 3	0	0
4	K	109	Total 811	C 505	N 136	O 167	S 3	0	0

- Molecule 5 is a protein called RM20A3 Rab heavy chain.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	C	124	Total 943	C 595	N 161	O 182	S 5	0	0
5	E	124	Total 943	C 595	N 161	O 182	S 5	0	0
5	J	124	Total 943	C 595	N 161	O 182	S 5	0	0

- Molecule 6 is an oligosaccharide called 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-a cetamido-2-deoxy-beta-D-glucopyranose.

Mol	Chain	Residues	Atoms				AltConf	Trace
6	P	2	Total 28	C 16	N 2	O 10	0	0
6	Q	2	Total 28	C 16	N 2	O 10	0	0
6	S	2	Total 28	C 16	N 2	O 10	0	0
6	T	2	Total 28	C 16	N 2	O 10	0	0
6	V	2	Total 28	C 16	N 2	O 10	0	0
6	W	2	Total 28	C 16	N 2	O 10	0	0

- Molecule 7 is an oligosaccharide called beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-b eta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.

Mol	Chain	Residues	Atoms				AltConf	Trace
7	R	3	Total	C	N	O	0	0
			39	22	2	15		
7	U	3	Total	C	N	O	0	0
			39	22	2	15		
7	X	3	Total	C	N	O	0	0
			39	22	2	15		

- Molecule 8 is 2-acetamido-2-deoxy-beta-D-glucopyranose (CCD ID: NAG) (formula: $C_8H_{15}NO_6$).

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

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Mol	Chain	Residues	Atoms				AltConf
8	A	1	Total 14	C 8	N 1	O 5	0
8	A	1	Total 14	C 8	N 1	O 5	0
8	A	1	Total 14	C 8	N 1	O 5	0
8	G	1	Total 14	C 8	N 1	O 5	0
8	G	1	Total 14	C 8	N 1	O 5	0
8	G	1	Total 14	C 8	N 1	O 5	0
8	G	1	Total 14	C 8	N 1	O 5	0
8	G	1	Total 14	C 8	N 1	O 5	0
8	G	1	Total 14	C 8	N 1	O 5	0
8	G	1	Total 14	C 8	N 1	O 5	0
8	G	1	Total 14	C 8	N 1	O 5	0
8	G	1	Total 14	C 8	N 1	O 5	0
8	B	1	Total 14	C 8	N 1	O 5	0
8	B	1	Total 14	C 8	N 1	O 5	0
8	B	1	Total 14	C 8	N 1	O 5	0
8	B	1	Total 14	C 8	N 1	O 5	0
8	B	1	Total 14	C 8	N 1	O 5	0
8	B	1	Total 14	C 8	N 1	O 5	0
8	B	1	Total 14	C 8	N 1	O 5	0
8	B	1	Total 14	C 8	N 1	O 5	0
8	B	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: 001428_T278M_L14 SOSIP gp140

Chain A:

• Molecule 1: 001428_T278M_L14 SOSIP gp140

Chain G:

• Molecule 1: 001428_T278M_L14 SOSIP gp140

Chain B:

D167 N185C ARG GLY ASP SER ASN S187 A221 D289 M341 L342 R343 R344 E370 G431 R432 R456 N463 R469 R503 R504 VAL VAL GLY SER HIS SER GLY SER GLY GLY SER GLY SER GLY HIS ALA ALA VAL GLY LEU GLY ALA VAL SER L520 S546

GLY ILE VAL GLN GLN GLN SER ASN LEU LEU GLN ALA PRO GLU PRO GLN GLN HIS LEU LEU GLN ASP THR HIS TRP G572 D659 L663 D664

• Molecule 2: G002-293-0536 Fab heavy chain

Chain H:

5%

52% • 46%

Q1 G8 K13 A40 P41 G42 Q43 R53 G65 R71 D72 T73 S74 R82B D85 R96 D99 S112 S113 ALA SER THR LYS GLY PRO SER VAL PHE PRO LEU ALA PRO SER SER LYS SER THR SER GLY GLY THR ALA ALA LEU GLY CYS LEU VAL LYS

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

ASN THR LYS VAL ASP LYS LYS VAL GLU PRO LYS SER CYS

• Molecule 2: G002-293-0536 Fab heavy chain

Chain I:

5%

52% • 46%

Q1 G8 K13 A40 P41 G42 Q43 R53 G65 R71 D72 T73 S74 R82B D85 R96 D99 S112 S113 ALA SER THR LYS GLY PRO SER VAL PHE PRO LEU ALA PRO SER SER LYS SER THR SER GLY GLY THR ALA ALA LEU GLY CYS LEU VAL LYS

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

ASN THR LYS VAL ASP LYS LYS VAL GLU PRO LYS SER CYS

• Molecule 2: G002-293-0536 Fab heavy chain

Chain N:

5%

52% • 46%

Q1 G8 K13 A40 P41 G42 Q43 R53 G65 R71 D72 T73 S74 R82B D85 R96 D99 S112 S113 ALA SER THR LYS GLY PRO SER VAL PHE PRO LEU ALA PRO SER SER LYS SER THR SER GLY GLY THR ALA ALA LEU GLY CYS LEU VAL LYS

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

ASN THR LYS VAL ASP LYS LYS VAL GLU PRO LYS SER CYS

• Molecule 3: G002-293-0536 Fab light chain

Chain L:

15%

47% • 52%

• Molecule 3: G002-293-0536 Fab light chain

Chain M:

15%

47% 52%

• Molecule 3: G002-293-0536 Fab light chain

Chain O:

15%

47% 52%

• Molecule 4: RM20A3 Fab light chain

Chain D:

49% 49%

• Molecule 4: RM20A3 Fab light chain

Chain F:

49% 49%

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

VAL ALA PRO THR GLU CYS SER

• Molecule 4: RM20A3 Fab light chain

Chain K:

49%   •   49%

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

ALA PRO THR GLU CYS SER

• Molecule 5: RM20A3 Rab heavy chain

Chain C:

54%   •   46%

SER ALA SER THR LYS GLY PRO SER VAL PHE PRO LEU ALA PRO SER SER LYS SER THR SER GLY GLY THR ALA ALA LEU GLY CYS LEU VAL LYS ASP TYR PHE PRO GLU PRO VAL THR VAL SER TRP ASN SER GLY ALA LEU THR SER

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

• Molecule 5: RM20A3 Rab heavy chain

Chain E:

54%   •   46%

SER ALA SER THR LYS GLY PRO SER VAL PHE PRO LEU ALA PRO SER SER LYS SER THR SER GLY GLY THR ALA ALA LEU GLY CYS LEU VAL LYS ASP TYR PHE PRO GLU PRO VAL THR VAL SER TRP ASN SER GLY ALA LEU THR SER

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

• Molecule 5: RM20A3 Rab heavy chain

Chain J:

54%   •   46%

SER ALA SER THR LYS GLY PRO SER VAL PHE PRO LEU ALA PRO SER SER LYS SER THR SER GLY GLY THR ALA ALA LEU GLY CYS LEU VAL LYS ASP TYR PHE PRO GLU PRO VAL THR VAL SER TRP ASN SER GLY ALA LEU THR SER

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

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

Chain P:

| 50% | 50% |

NAG1 NAG2

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

Chain Q:
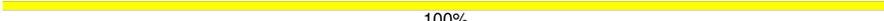
100%

NAG1 NAG2

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

Chain S:

| 50% | 50% |

NAG1 NAG2

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

Chain T:
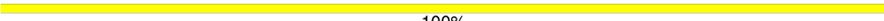
100%

NAG1 NAG2

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

Chain V:

| 50% | 50% |

NAG1 NAG2

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

Chain W:

100%
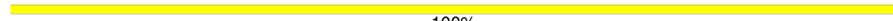
NAG1 NAG2

• Molecule 7: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-ac etamido-2-deoxy-beta-D-glucopyranose

Chain R:
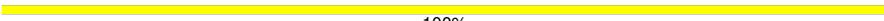
100%

NAG1
NAG2
BMA3

• Molecule 7: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-ac etamido-2-deoxy-beta-D-glucopyranose

Chain U:
100%

NAG1
NAG2
BMA3

• Molecule 7: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-ac etamido-2-deoxy-beta-D-glucopyranose

Chain X:
100%

NAG1
NAG2
BMA3

4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C3	Depositor
Number of particles used	47344	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	TFS GLACIOS	Depositor
Voltage (kV)	200	Depositor
Electron dose $(e^-/\text{Å}^2)$	50	Depositor
Minimum defocus (nm)	700	Depositor
Maximum defocus (nm)	1800	Depositor
Magnification	190000	Depositor
Image detector	TFS FALCON 4i (4k x 4k)	Depositor
Maximum map value	1.289	Depositor
Minimum map value	-0.904	Depositor
Average map value	-0.000	Depositor
Map value standard deviation	0.025	Depositor
Recommended contour level	0.15	Depositor
Map size (Å)	402.08002, 402.08002, 402.08002	wwPDB
Map dimensions	400, 400, 400	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.0052, 1.0052, 1.0052	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	0.23	0/4485	0.52	0/6084
1	B	0.23	0/4485	0.52	0/6084
1	G	0.23	0/4485	0.52	0/6084
2	H	0.26	0/987	0.50	0/1337
2	I	0.26	0/987	0.50	0/1337
2	N	0.26	0/987	0.50	0/1337
3	L	0.21	0/777	0.47	0/1053
3	M	0.21	0/777	0.47	0/1053
3	O	0.21	0/777	0.47	0/1053
4	D	0.24	0/830	0.51	0/1129
4	F	0.25	0/830	0.51	0/1129
4	K	0.24	0/830	0.51	0/1129
5	C	0.21	0/963	0.47	0/1300
5	E	0.21	0/963	0.47	0/1300
5	J	0.21	0/963	0.47	0/1300
All	All	0.23	0/24126	0.51	0/32709

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

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	5
1	B	0	5
1	G	0	5
2	H	0	2
2	I	0	2
2	N	0	2
All	All	0	21

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (21) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	343	ARG	Sidechain
1	A	344	ARG	Sidechain
1	A	456	ARG	Sidechain
1	A	469	ARG	Sidechain
1	A	503	ARG	Sidechain
1	B	343	ARG	Sidechain
1	B	344	ARG	Sidechain
1	B	456	ARG	Sidechain
1	B	469	ARG	Sidechain
1	B	503	ARG	Sidechain
1	G	343	ARG	Sidechain
1	G	344	ARG	Sidechain
1	G	456	ARG	Sidechain
1	G	469	ARG	Sidechain
1	G	503	ARG	Sidechain
2	H	53	ARG	Sidechain
2	H	71	ARG	Sidechain
2	I	53	ARG	Sidechain
2	I	71	ARG	Sidechain
2	N	53	ARG	Sidechain
2	N	71	ARG	Sidechain

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	4399	0	4319	6	0
1	B	4399	0	4319	7	0
1	G	4399	0	4319	5	0
2	H	961	0	931	2	0
2	I	961	0	931	2	0
2	N	961	0	931	2	0
3	L	760	0	728	1	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	M	760	0	728	1	0
3	O	760	0	728	1	0
4	D	811	0	767	2	0
4	F	811	0	767	2	0
4	K	811	0	767	2	0
5	C	943	0	915	2	0
5	E	943	0	915	2	0
5	J	943	0	915	2	0
6	P	28	0	25	0	0
6	Q	28	0	25	0	0
6	S	28	0	25	0	0
6	T	28	0	25	0	0
6	V	28	0	25	0	0
6	W	28	0	25	0	0
7	R	39	0	34	0	0
7	U	39	0	34	0	0
7	X	39	0	34	0	0
8	A	126	0	117	0	0
8	B	126	0	117	0	0
8	G	126	0	117	0	0
All	All	24285	0	23583	33	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 1.

All (33) 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:H:96:ARG:NH1	3:L:55:GLU:OE1	2.30	0.65
2:N:96:ARG:NH1	3:O:55:GLU:OE1	2.30	0.65
1:A:289:ASP:OD2	1:A:344:ARG:NH2	2.31	0.64
2:I:96:ARG:NH1	3:M:55:GLU:OE1	2.30	0.64
1:G:289:ASP:OD2	1:G:344:ARG:NH2	2.31	0.62
1:B:289:ASP:OD2	1:B:344:ARG:NH2	2.31	0.62
1:A:50:THR:O	1:A:103:GLN:NE2	2.34	0.61
1:G:50:THR:O	1:G:103:GLN:NE2	2.34	0.60
1:B:50:THR:O	1:B:103:GLN:NE2	2.34	0.60
5:C:53:ARG:NH2	1:G:659:ASP:OD2	2.40	0.55
5:E:53:ARG:NH2	1:B:659:ASP:OD2	2.40	0.54
1:A:659:ASP:OD2	5:J:53:ARG:NH2	2.40	0.54
2:N:65:GLY:O	2:N:82(B):ARG:NH2	2.44	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:H:65:GLY:O	2:H:82(B):ARG:NH2	2.44	0.50
4:K:77:GLY:O	4:K:79:GLN:NE2	2.45	0.50
2:I:65:GLY:O	2:I:82(B):ARG:NH2	2.44	0.50
4:D:77:GLY:O	4:D:79:GLN:NE2	2.45	0.50
4:F:77:GLY:O	4:F:79:GLN:NE2	2.45	0.49
4:K:26:THR:OG1	4:K:27:SER:N	2.48	0.47
4:D:26:THR:OG1	4:D:27:SER:N	2.48	0.46
1:G:663:LEU:O	1:G:664:ASP:HB2	2.16	0.46
1:A:663:LEU:O	1:A:664:ASP:HB2	2.15	0.46
1:B:663:LEU:O	1:B:664:ASP:HB2	2.16	0.45
5:J:6:GLU:OE1	5:J:6:GLU:N	2.51	0.44
4:F:26:THR:OG1	4:F:27:SER:N	2.48	0.43
1:B:152:ASP:OD1	1:B:153:GLU:N	2.49	0.42
1:B:370:GLU:OE1	1:B:370:GLU:N	2.48	0.42
5:E:6:GLU:N	5:E:6:GLU:OE1	2.51	0.42
1:B:463:ASN:ND2	1:B:463:ASN:O	2.53	0.42
1:G:463:ASN:O	1:G:463:ASN:ND2	2.53	0.42
1:A:463:ASN:O	1:A:463:ASN:ND2	2.53	0.42
5:C:6:GLU:OE1	5:C:6:GLU:N	2.51	0.41
1:A:152:ASP:OD1	1:A:153:GLU:N	2.49	0.41

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	546/650 (84%)	522 (96%)	24 (4%)	0	100	100
1	B	546/650 (84%)	522 (96%)	24 (4%)	0	100	100
1	G	546/650 (84%)	522 (96%)	24 (4%)	0	100	100
2	H	119/224 (53%)	113 (95%)	6 (5%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
2	I	119/224 (53%)	113 (95%)	6 (5%)	0	100	100
2	N	119/224 (53%)	113 (95%)	6 (5%)	0	100	100
3	L	98/210 (47%)	91 (93%)	7 (7%)	0	100	100
3	M	98/210 (47%)	91 (93%)	7 (7%)	0	100	100
3	O	98/210 (47%)	91 (93%)	7 (7%)	0	100	100
4	D	107/215 (50%)	100 (94%)	7 (6%)	0	100	100
4	F	107/215 (50%)	100 (94%)	7 (6%)	0	100	100
4	K	107/215 (50%)	100 (94%)	7 (6%)	0	100	100
5	C	122/228 (54%)	115 (94%)	7 (6%)	0	100	100
5	E	122/228 (54%)	115 (94%)	7 (6%)	0	100	100
5	J	122/228 (54%)	115 (94%)	7 (6%)	0	100	100
All	All	2976/4581 (65%)	2823 (95%)	153 (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	497/567 (88%)	493 (99%)	4 (1%)	79	90
1	B	497/567 (88%)	493 (99%)	4 (1%)	79	90
1	G	497/567 (88%)	493 (99%)	4 (1%)	79	90
2	H	100/189 (53%)	100 (100%)	0	100	100
2	I	100/189 (53%)	100 (100%)	0	100	100
2	N	100/189 (53%)	100 (100%)	0	100	100
3	L	84/183 (46%)	83 (99%)	1 (1%)	67	85
3	M	84/183 (46%)	83 (99%)	1 (1%)	67	85
3	O	84/183 (46%)	83 (99%)	1 (1%)	67	85
4	D	89/180 (49%)	89 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
4	F	89/180 (49%)	89 (100%)	0	100	100
4	K	89/180 (49%)	89 (100%)	0	100	100
5	C	101/191 (53%)	101 (100%)	0	100	100
5	E	101/191 (53%)	101 (100%)	0	100	100
5	J	101/191 (53%)	101 (100%)	0	100	100
All	All	2613/3930 (66%)	2598 (99%)	15 (1%)	82	92

All (15) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	52	LEU
1	A	99	ASP
1	A	120	VAL
1	A	341	MET
3	L	49	TYR
1	G	52	LEU
1	G	99	ASP
1	G	120	VAL
1	G	341	MET
3	M	49	TYR
1	B	52	LEU
1	B	99	ASP
1	B	120	VAL
1	B	341	MET
3	O	49	TYR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (18) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	170	GLN
1	A	374	HIS
1	A	422	GLN
1	A	540	GLN
1	A	543	GLN
2	H	79	HIS
1	G	170	GLN
1	G	374	HIS
1	G	422	GLN
1	G	540	GLN

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Mol	Chain	Res	Type
1	G	543	GLN
1	B	170	GLN
1	B	339	HIS
1	B	374	HIS
1	B	422	GLN
1	B	540	GLN
1	B	543	GLN
1	B	591	GLN

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 ⓘ

21 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	$\#|Z| > 2$
6	NAG	P	1	1,6	14,14,15	0.74	0	17,19,21	1.03	2 (11%)
6	NAG	P	2	6	14,14,15	0.68	0	17,19,21	0.99	0
6	NAG	Q	1	1,6	14,14,15	0.68	0	17,19,21	0.95	1 (5%)
6	NAG	Q	2	6	14,14,15	0.70	0	17,19,21	1.01	1 (5%)
7	NAG	R	1	1,7	14,14,15	0.72	0	17,19,21	1.41	3 (17%)
7	NAG	R	2	7	14,14,15	0.69	0	17,19,21	1.13	2 (11%)
7	BMA	R	3	7	11,11,12	0.75	0	15,15,17	1.23	1 (6%)
6	NAG	S	1	1,6	14,14,15	0.75	0	17,19,21	1.03	2 (11%)
6	NAG	S	2	6	14,14,15	0.68	0	17,19,21	0.99	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	#$\|Z\|$ > 2	Counts	RMSZ	#$\|Z\|$ > 2
6	NAG	T	1	1,6	14,14,15	0.69	0	17,19,21	0.94	1 (5%)
6	NAG	T	2	6	14,14,15	0.69	0	17,19,21	1.01	1 (5%)
7	NAG	U	1	1,7	14,14,15	0.72	0	17,19,21	1.42	3 (17%)
7	NAG	U	2	7	14,14,15	0.68	0	17,19,21	1.13	2 (11%)
7	BMA	U	3	7	11,11,12	0.76	0	15,15,17	1.23	1 (6%)
6	NAG	V	1	1,6	14,14,15	0.75	0	17,19,21	1.04	2 (11%)
6	NAG	V	2	6	14,14,15	0.68	0	17,19,21	0.99	0
6	NAG	W	1	1,6	14,14,15	0.68	0	17,19,21	0.94	1 (5%)
6	NAG	W	2	6	14,14,15	0.69	0	17,19,21	1.01	1 (5%)
7	NAG	X	1	1,7	14,14,15	0.72	0	17,19,21	1.42	3 (17%)
7	NAG	X	2	7	14,14,15	0.69	0	17,19,21	1.13	2 (11%)
7	BMA	X	3	7	11,11,12	0.76	0	15,15,17	1.23	1 (6%)

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
6	NAG	P	1	1,6	-	0/6/23/26	0/1/1/1
6	NAG	P	2	6	-	1/6/23/26	0/1/1/1
6	NAG	Q	1	1,6	-	0/6/23/26	0/1/1/1
6	NAG	Q	2	6	-	1/6/23/26	0/1/1/1
7	NAG	R	1	1,7	-	2/6/23/26	0/1/1/1
7	NAG	R	2	7	-	0/6/23/26	0/1/1/1
7	BMA	R	3	7	-	2/2/19/22	0/1/1/1
6	NAG	S	1	1,6	-	0/6/23/26	0/1/1/1
6	NAG	S	2	6	-	1/6/23/26	0/1/1/1
6	NAG	T	1	1,6	-	0/6/23/26	0/1/1/1
6	NAG	T	2	6	-	1/6/23/26	0/1/1/1
7	NAG	U	1	1,7	-	2/6/23/26	0/1/1/1
7	NAG	U	2	7	-	0/6/23/26	0/1/1/1
7	BMA	U	3	7	-	2/2/19/22	0/1/1/1
6	NAG	V	1	1,6	-	0/6/23/26	0/1/1/1
6	NAG	V	2	6	-	1/6/23/26	0/1/1/1
6	NAG	W	1	1,6	-	0/6/23/26	0/1/1/1
6	NAG	W	2	6	-	1/6/23/26	0/1/1/1
7	NAG	X	1	1,7	-	2/6/23/26	0/1/1/1
7	NAG	X	2	7	-	0/6/23/26	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
7	BMA	X	3	7	-	2/2/19/22	0/1/1/1

There are no bond length outliers.

All (30) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
7	U	1	NAG	C1-O5-C5	3.92	117.44	112.19
7	R	1	NAG	C1-O5-C5	3.92	117.44	112.19
7	X	1	NAG	C1-O5-C5	3.92	117.43	112.19
7	U	3	BMA	C1-O5-C5	3.69	117.12	112.19
7	X	3	BMA	C1-O5-C5	3.68	117.11	112.19
7	R	3	BMA	C1-O5-C5	3.65	117.08	112.19
6	V	1	NAG	C1-O5-C5	2.46	115.48	112.19
6	S	1	NAG	C1-O5-C5	2.45	115.47	112.19
6	Q	2	NAG	C1-O5-C5	2.44	115.46	112.19
6	P	1	NAG	C1-O5-C5	2.44	115.45	112.19
6	T	2	NAG	C1-O5-C5	2.44	115.45	112.19
6	W	2	NAG	C1-O5-C5	2.44	115.45	112.19
7	U	2	NAG	C2-N2-C7	2.31	126.00	122.90
7	X	2	NAG	C2-N2-C7	2.31	126.00	122.90
7	R	2	NAG	C2-N2-C7	2.31	126.00	122.90
6	P	1	NAG	O4-C4-C3	-2.29	104.98	110.38
6	V	1	NAG	O4-C4-C3	-2.29	104.98	110.38
6	S	1	NAG	O4-C4-C3	-2.29	104.99	110.38
6	Q	1	NAG	C1-O5-C5	2.26	115.22	112.19
6	W	1	NAG	C1-O5-C5	2.25	115.20	112.19
6	T	1	NAG	C1-O5-C5	2.25	115.20	112.19
7	R	2	NAG	C1-O5-C5	2.13	115.04	112.19
7	U	1	NAG	O4-C4-C3	-2.12	105.38	110.38
7	X	1	NAG	O4-C4-C3	-2.12	105.38	110.38
7	R	1	NAG	O4-C4-C3	-2.12	105.39	110.38
7	U	2	NAG	C1-O5-C5	2.11	115.02	112.19
7	X	2	NAG	C1-O5-C5	2.11	115.01	112.19
7	R	1	NAG	C2-N2-C7	2.01	125.59	122.90
7	X	1	NAG	C2-N2-C7	2.01	125.59	122.90
7	U	1	NAG	C2-N2-C7	2.00	125.59	122.90

There are no chirality outliers.

All (18) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
6	P	2	NAG	O5-C5-C6-O6
6	S	2	NAG	O5-C5-C6-O6
6	V	2	NAG	O5-C5-C6-O6
6	Q	2	NAG	O5-C5-C6-O6
6	T	2	NAG	O5-C5-C6-O6
6	W	2	NAG	O5-C5-C6-O6
7	R	1	NAG	C4-C5-C6-O6
7	X	1	NAG	C4-C5-C6-O6
7	U	1	NAG	C4-C5-C6-O6
7	X	1	NAG	O5-C5-C6-O6
7	R	1	NAG	O5-C5-C6-O6
7	U	1	NAG	O5-C5-C6-O6
7	R	3	BMA	C4-C5-C6-O6
7	U	3	BMA	C4-C5-C6-O6
7	X	3	BMA	C4-C5-C6-O6
7	R	3	BMA	O5-C5-C6-O6
7	X	3	BMA	O5-C5-C6-O6
7	U	3	BMA	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 oligosaccharide.

Oligosaccharide Chain P

Bond lengths

Bond angles

Torsions

Rings

Oligosaccharide Chain Q

Bond lengths

Bond angles

Torsions

Rings

Oligosaccharide Chain S

Bond lengths

Bond angles

Torsions

Rings

Oligosaccharide Chain T

Bond lengths

Bond angles

Torsions

Rings

Oligosaccharide Chain V

Bond lengths

Bond angles

Torsions

Rings

Oligosaccharide Chain W

Bond lengths

Bond angles

Torsions

Rings

Oligosaccharide Chain R

Bond lengths

Bond angles

Torsions

Rings

Oligosaccharide Chain U

Bond lengths

Bond angles

Torsions

Rings

Oligosaccharide Chain X

Bond lengths

Bond angles

Torsions

Rings

5.6 Ligand geometry (i)

27 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	#$|Z| > 2$
8	NAG	G	704	1	14,14,15	0.72	0	17,19,21	0.89	1 (5%)
8	NAG	G	703	1	14,14,15	0.75	0	17,19,21	1.07	0
8	NAG	B	705	1	14,14,15	0.69	0	17,19,21	0.95	0
8	NAG	B	708	1	14,14,15	0.68	0	17,19,21	1.05	1 (5%)
8	NAG	G	707	1	14,14,15	0.70	0	17,19,21	0.95	0
8	NAG	G	702	1	14,14,15	0.70	0	17,19,21	1.14	1 (5%)
8	NAG	B	709	1	14,14,15	0.71	0	17,19,21	1.00	0
8	NAG	A	701	1	14,14,15	0.68	0	17,19,21	0.86	0
8	NAG	B	704	1	14,14,15	0.73	0	17,19,21	0.89	1 (5%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	#|Z| > 2	Counts	RMSZ	#|Z| > 2
8	NAG	B	706	1	14,14,15	0.68	0	17,19,21	0.96	1 (5%)
8	NAG	G	709	1	14,14,15	0.71	0	17,19,21	1.00	0
8	NAG	A	705	1	14,14,15	0.69	0	17,19,21	0.95	0
8	NAG	A	708	1	14,14,15	0.69	0	17,19,21	1.05	1 (5%)
8	NAG	B	703	1	14,14,15	0.75	0	17,19,21	1.07	0
8	NAG	B	707	1	14,14,15	0.69	0	17,19,21	0.95	0
8	NAG	A	709	1	14,14,15	0.71	0	17,19,21	1.00	0
8	NAG	A	704	1	14,14,15	0.73	0	17,19,21	0.89	1 (5%)
8	NAG	G	701	1	14,14,15	0.68	0	17,19,21	0.86	0
8	NAG	B	702	1	14,14,15	0.70	0	17,19,21	1.14	1 (5%)
8	NAG	G	708	1	14,14,15	0.69	0	17,19,21	1.05	1 (5%)
8	NAG	G	705	1	14,14,15	0.69	0	17,19,21	0.95	0
8	NAG	A	707	1	14,14,15	0.70	0	17,19,21	0.95	0
8	NAG	A	702	1	14,14,15	0.70	0	17,19,21	1.14	1 (5%)
8	NAG	A	706	1	14,14,15	0.68	0	17,19,21	0.96	1 (5%)
8	NAG	A	703	1	14,14,15	0.75	0	17,19,21	1.07	0
8	NAG	G	706	1	14,14,15	0.68	0	17,19,21	0.96	1 (5%)
8	NAG	B	701	1	14,14,15	0.67	0	17,19,21	0.86	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
8	NAG	G	704	1	-	1/6/23/26	0/1/1/1
8	NAG	G	703	1	-	1/6/23/26	0/1/1/1
8	NAG	B	705	1	-	1/6/23/26	0/1/1/1
8	NAG	B	708	1	-	1/6/23/26	0/1/1/1
8	NAG	G	707	1	-	1/6/23/26	0/1/1/1
8	NAG	G	702	1	-	1/6/23/26	0/1/1/1
8	NAG	B	709	1	-	1/6/23/26	0/1/1/1
8	NAG	A	701	1	-	1/6/23/26	0/1/1/1
8	NAG	B	704	1	-	1/6/23/26	0/1/1/1
8	NAG	B	706	1	-	0/6/23/26	0/1/1/1
8	NAG	G	709	1	-	1/6/23/26	0/1/1/1
8	NAG	A	705	1	-	1/6/23/26	0/1/1/1
8	NAG	A	708	1	-	1/6/23/26	0/1/1/1
8	NAG	B	703	1	-	1/6/23/26	0/1/1/1
8	NAG	B	707	1	-	1/6/23/26	0/1/1/1
8	NAG	A	709	1	-	1/6/23/26	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
8	NAG	A	704	1	-	1/6/23/26	0/1/1/1
8	NAG	G	701	1	-	1/6/23/26	0/1/1/1
8	NAG	B	702	1	-	1/6/23/26	0/1/1/1
8	NAG	G	708	1	-	1/6/23/26	0/1/1/1
8	NAG	G	705	1	-	1/6/23/26	0/1/1/1
8	NAG	A	707	1	-	1/6/23/26	0/1/1/1
8	NAG	A	702	1	-	1/6/23/26	0/1/1/1
8	NAG	A	706	1	-	0/6/23/26	0/1/1/1
8	NAG	A	703	1	-	1/6/23/26	0/1/1/1
8	NAG	G	706	1	-	0/6/23/26	0/1/1/1
8	NAG	B	701	1	-	1/6/23/26	0/1/1/1

There are no bond length outliers.

All (12) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
8	B	702	NAG	C1-O5-C5	2.88	116.05	112.19
8	G	702	NAG	C1-O5-C5	2.88	116.05	112.19
8	A	702	NAG	C1-O5-C5	2.86	116.03	112.19
8	B	708	NAG	C1-O5-C5	2.37	115.36	112.19
8	G	708	NAG	C1-O5-C5	2.36	115.35	112.19
8	A	708	NAG	C1-O5-C5	2.35	115.34	112.19
8	A	704	NAG	C2-N2-C7	2.15	125.78	122.90
8	G	704	NAG	C2-N2-C7	2.13	125.76	122.90
8	B	704	NAG	C2-N2-C7	2.12	125.74	122.90
8	G	706	NAG	C1-O5-C5	2.02	114.89	112.19
8	A	706	NAG	C1-O5-C5	2.01	114.89	112.19
8	B	706	NAG	C1-O5-C5	2.01	114.88	112.19

There are no chirality outliers.

All (24) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
8	A	701	NAG	O5-C5-C6-O6
8	G	701	NAG	O5-C5-C6-O6
8	B	701	NAG	O5-C5-C6-O6
8	A	702	NAG	O5-C5-C6-O6
8	G	702	NAG	O5-C5-C6-O6
8	B	702	NAG	O5-C5-C6-O6
8	A	704	NAG	O5-C5-C6-O6
8	A	709	NAG	O5-C5-C6-O6

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Mol	Chain	Res	Type	Atoms
8	G	704	NAG	O5-C5-C6-O6
8	G	709	NAG	O5-C5-C6-O6
8	B	704	NAG	O5-C5-C6-O6
8	B	709	NAG	O5-C5-C6-O6
8	A	705	NAG	O5-C5-C6-O6
8	G	705	NAG	O5-C5-C6-O6
8	B	705	NAG	O5-C5-C6-O6
8	A	708	NAG	O5-C5-C6-O6
8	G	708	NAG	O5-C5-C6-O6
8	B	708	NAG	O5-C5-C6-O6
8	A	703	NAG	O5-C5-C6-O6
8	G	703	NAG	O5-C5-C6-O6
8	B	703	NAG	O5-C5-C6-O6
8	A	707	NAG	O5-C5-C6-O6
8	G	707	NAG	O5-C5-C6-O6
8	B	707	NAG	O5-C5-C6-O6

There are no ring outliers.

No monomer is involved in short contacts.

5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

6 Map visualisation ⓘ

This section contains visualisations of the EMDB entry EMD-48575. 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 ⓘ
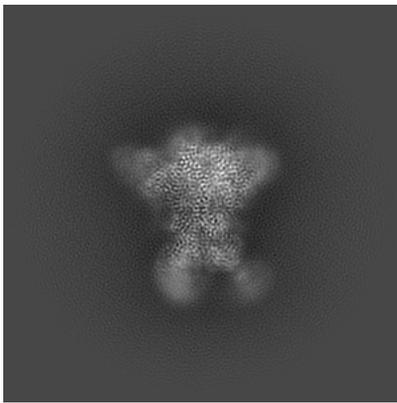
6.1.1 Primary map

X
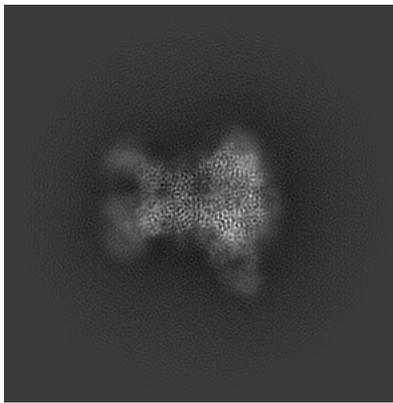
Y
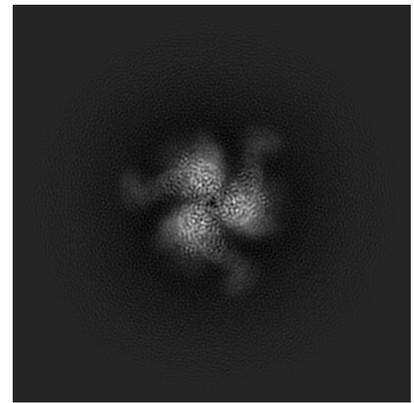
Z

6.1.2 Raw map

X

Y

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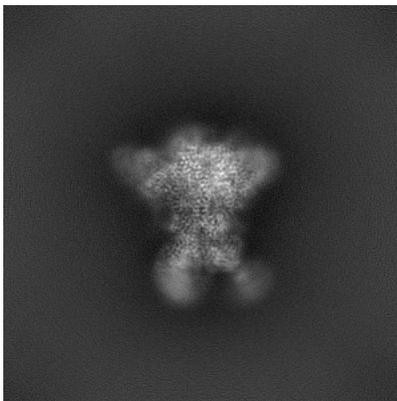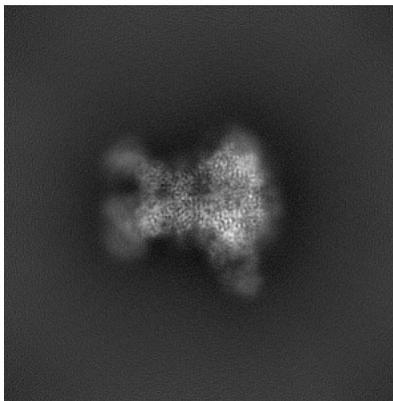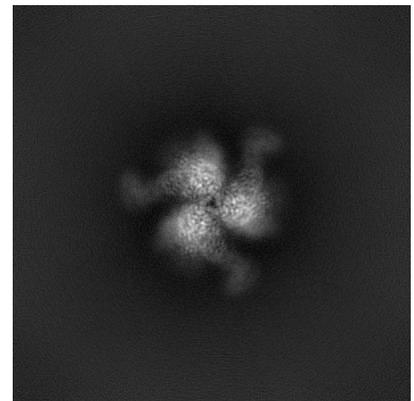
The images above show the map projected in three orthogonal directions.

6.2 Central slices ⓘ
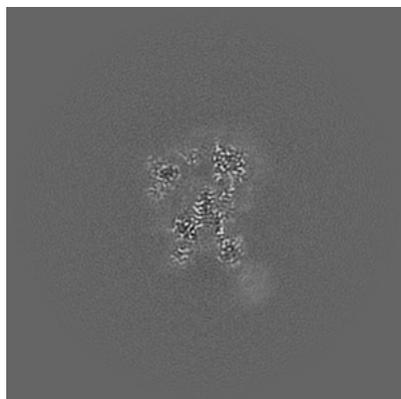
6.2.1 Primary map
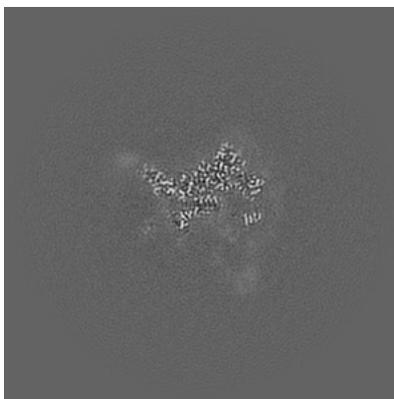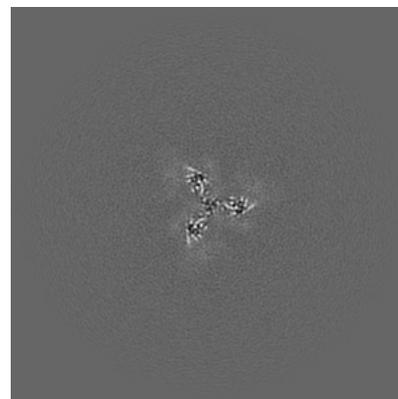
| X Index: 200 | Y Index: 200 | Z Index: 200 |

6.2.2 Raw map
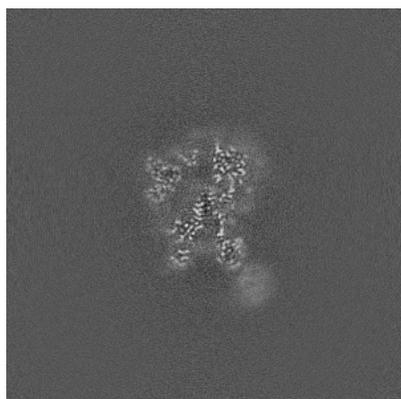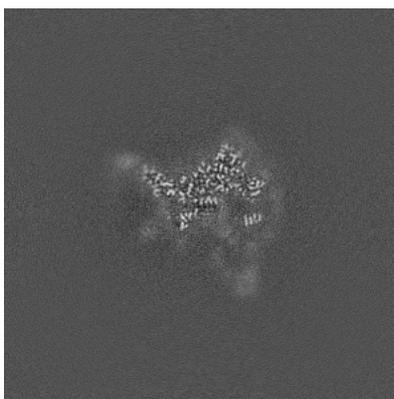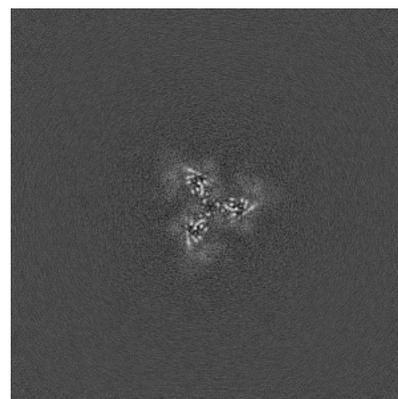
| X Index: 200 | Y Index: 200 | Z Index: 200 |

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

6.3   Largest variance slices ⓘ

6.3.1   Primary map
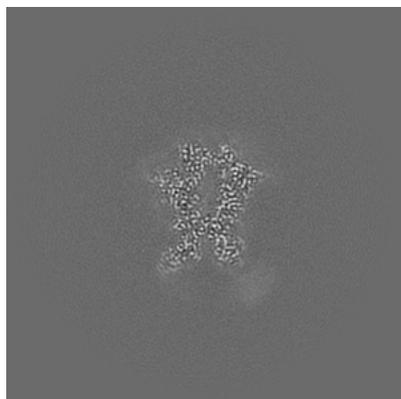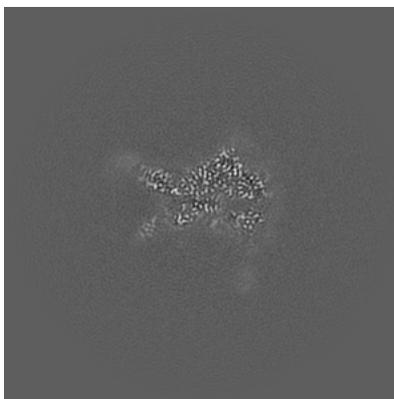
| X Index: 188 | Y Index: 196 | Z Index: 227 |
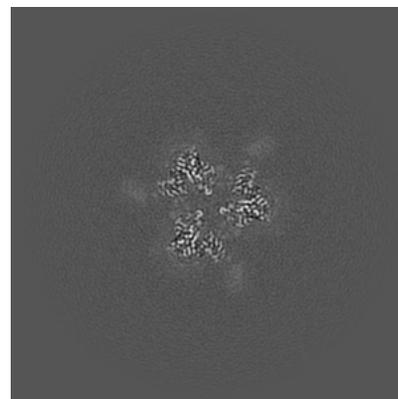
6.3.2   Raw map
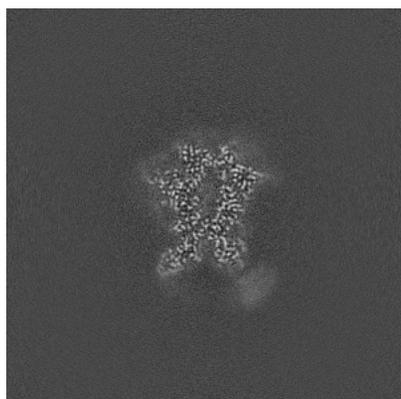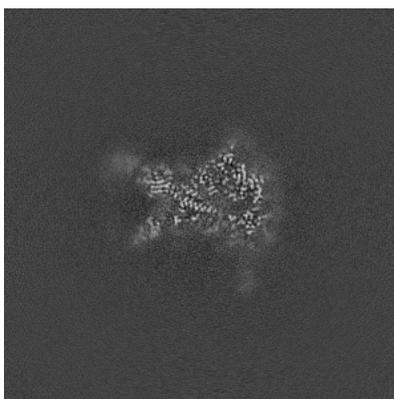
| X Index: 188 | Y Index: 193 | Z Index: 227 |
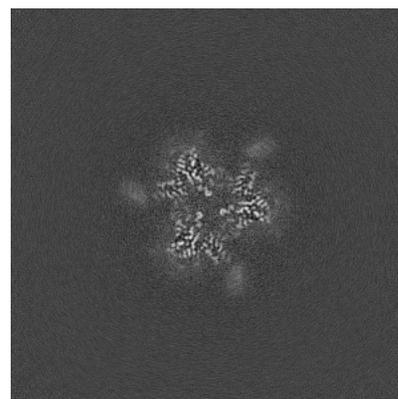
The images above show the largest variance slices of the map in three orthogonal directions.

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

6.4.1 Primary map
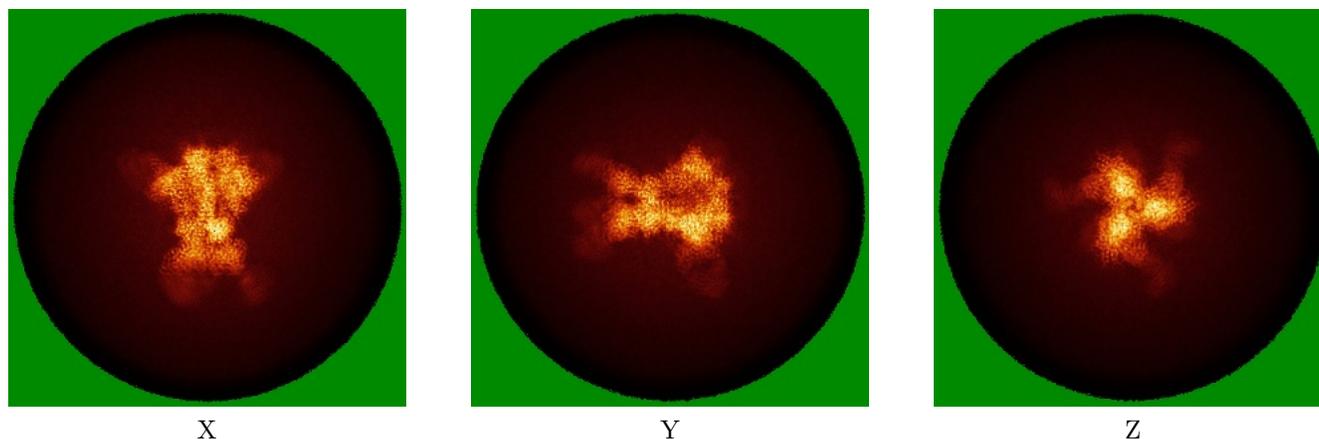
| X | Y | Z |

6.4.2 Raw map

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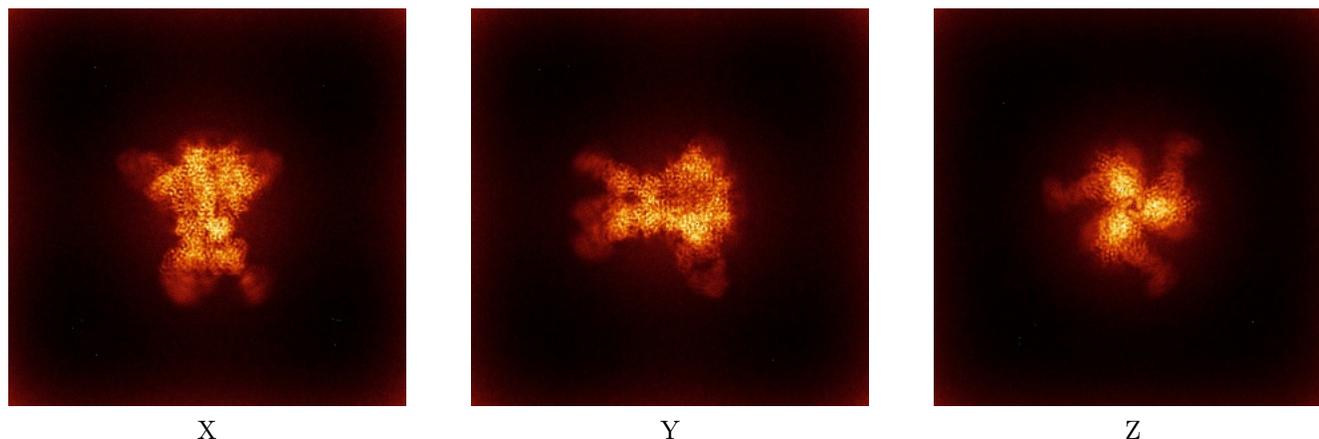
The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

6.5　Orthogonal surface views (i)

6.5.1　Primary map

X　　　　　　　　　Y　　　　　　　　　Z
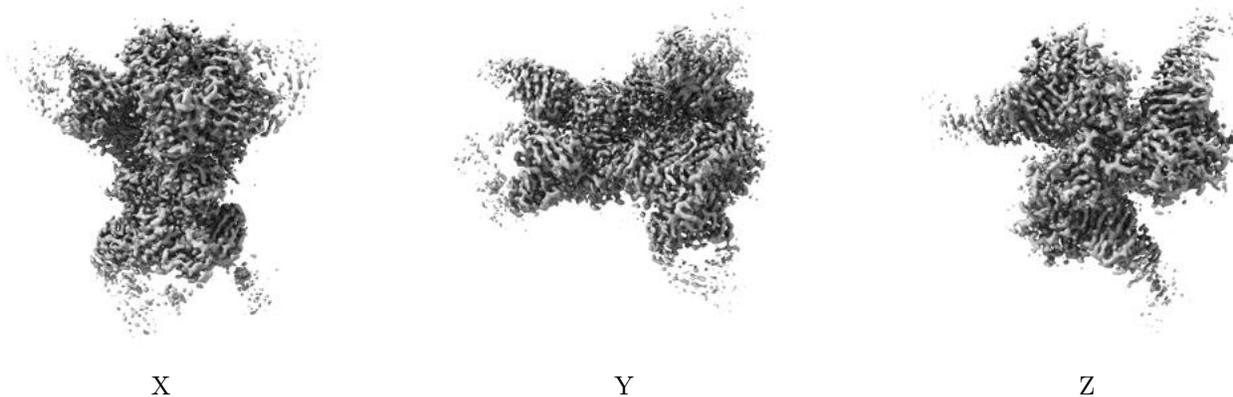
The images above show the 3D surface view of the map at the recommended contour level 0.15. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2　Raw map

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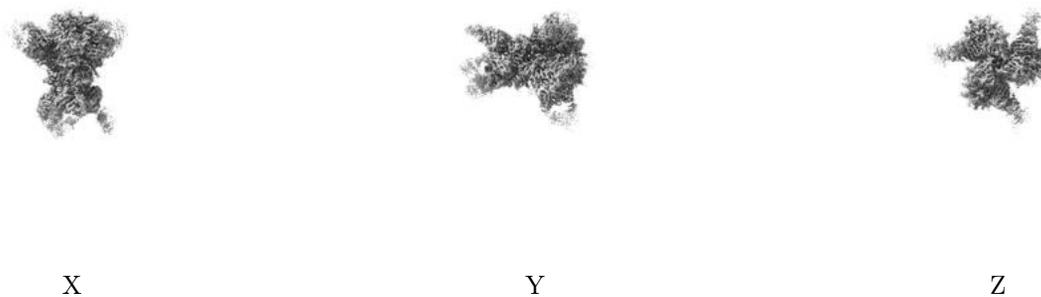
These images show the 3D surface of the raw map. The raw map's contour level was selected so that its surface encloses the same volume as the primary map does at its recommended contour level.

6.6　Mask visualisation ⓘ

This section shows the 3D surface view of the primary map at 50% transparency overlaid with the specified mask at 0% transparency

A mask typically either:

- Encompasses the whole structure

- Separates out a domain, a functional unit, a monomer or an area of interest from a larger structure

6.6.1　emd_48575_msk_1.map ⓘ

X　　　　　　　　　　Y　　　　　　　　　　Z
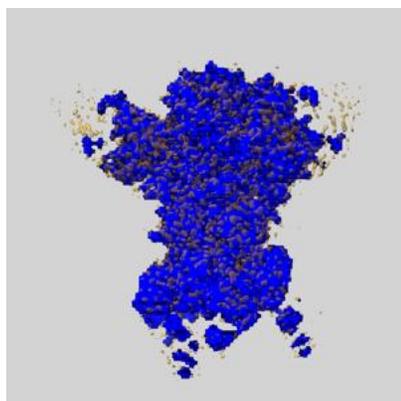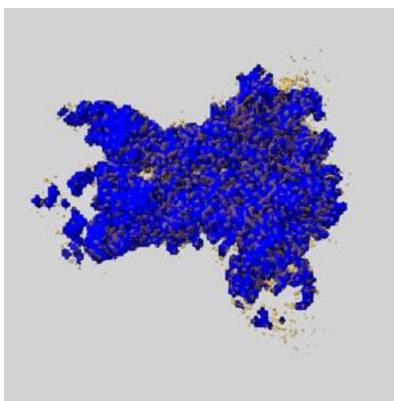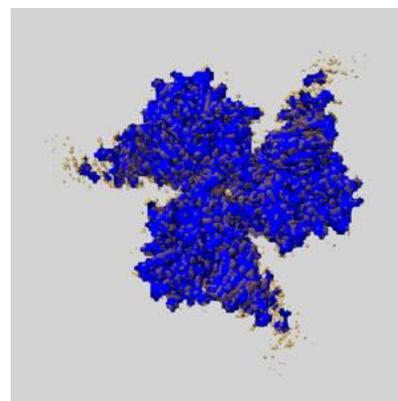
7 Map analysis ⓘ

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 ⓘ
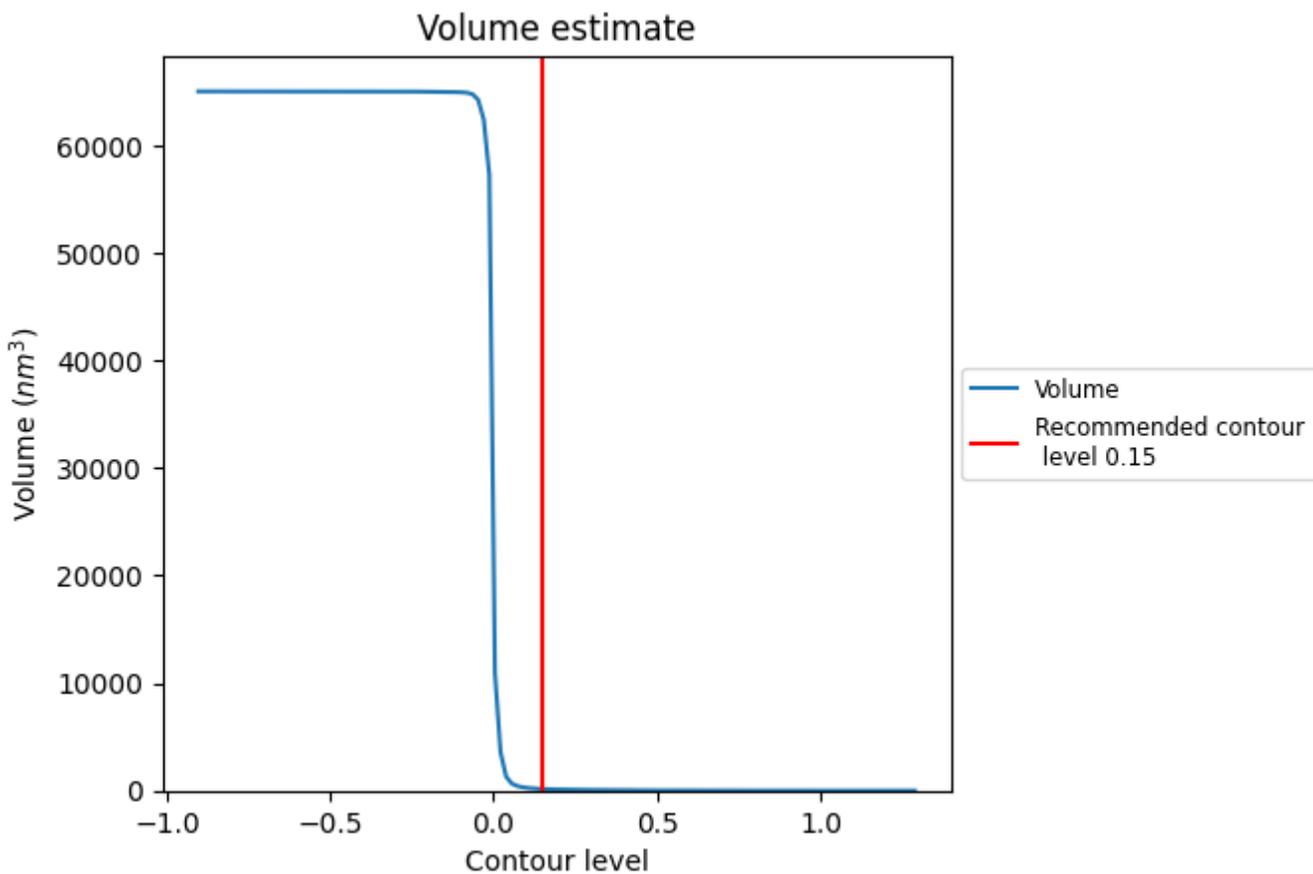
The volume at the recommended contour level is 152 nm^3; this corresponds to an approximate mass of 137 kDa.

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   ⓘ
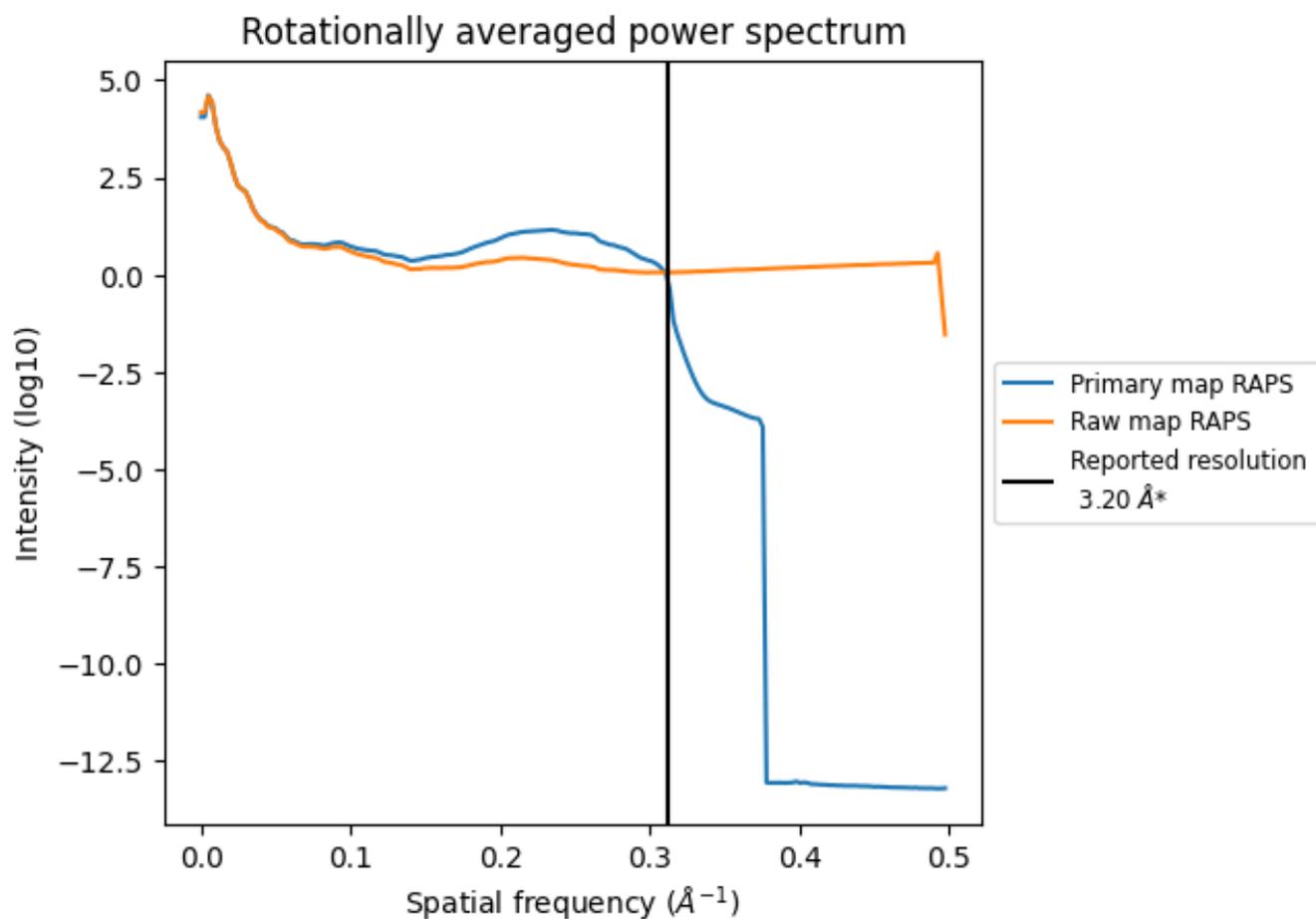
*Reported resolution corresponds to spatial frequency of 0.312 Å^{-1}

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)
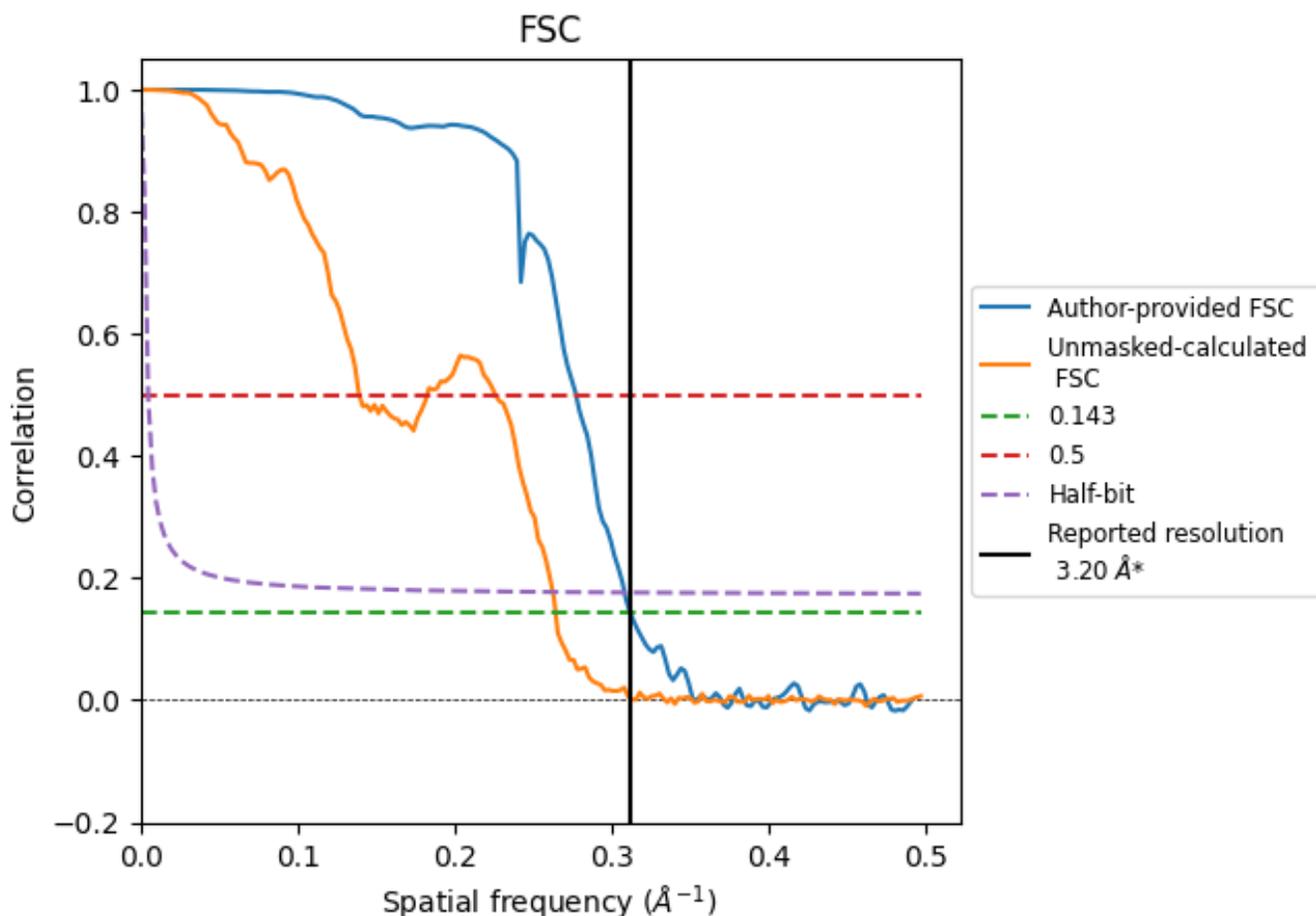
*Reported resolution corresponds to spatial frequency of 0.312 Å^{-1}

8.2   Resolution estimates ⓘ

Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.20	-	-
Author-provided FSC curve	3.20	3.60	3.24
Unmasked-calculated*	3.78	7.17	3.80

*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 3.78 differs from the reported value 3.2 by more than 10 %

9　Map-model fit ⓘ

This section contains information regarding the fit between EMDB map EMD-48575 and PDB model 9MSD. Per-residue inclusion information can be found in section 3 on page 10.

9.1　Map-model overlay ⓘ

X　　　　　　　　　　Y　　　　　　　　　　Z
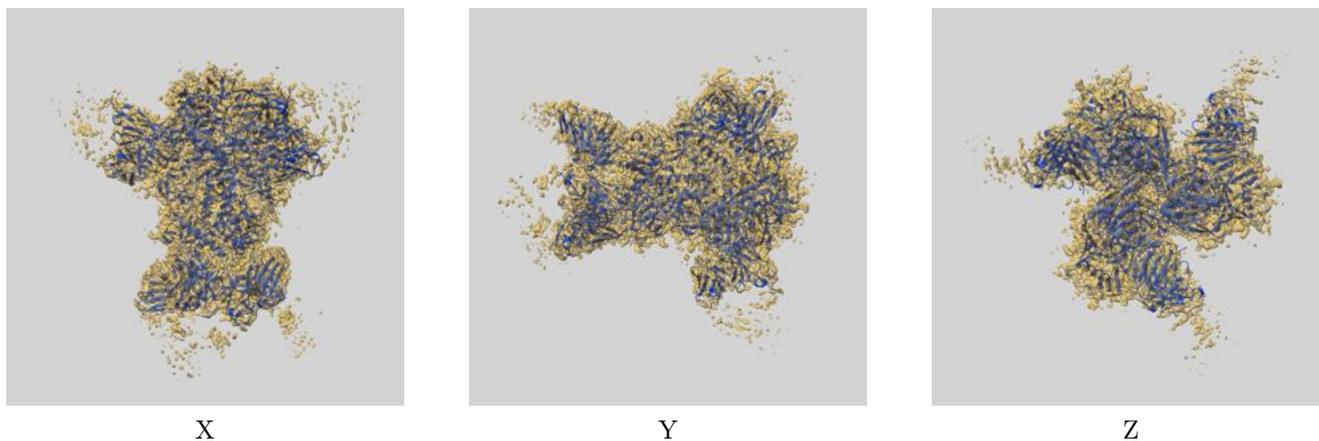
The images above show the 3D surface view of the map at the recommended contour level 0.15 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

9.2 Q-score mapped to coordinate model ⓘ

X Y Z
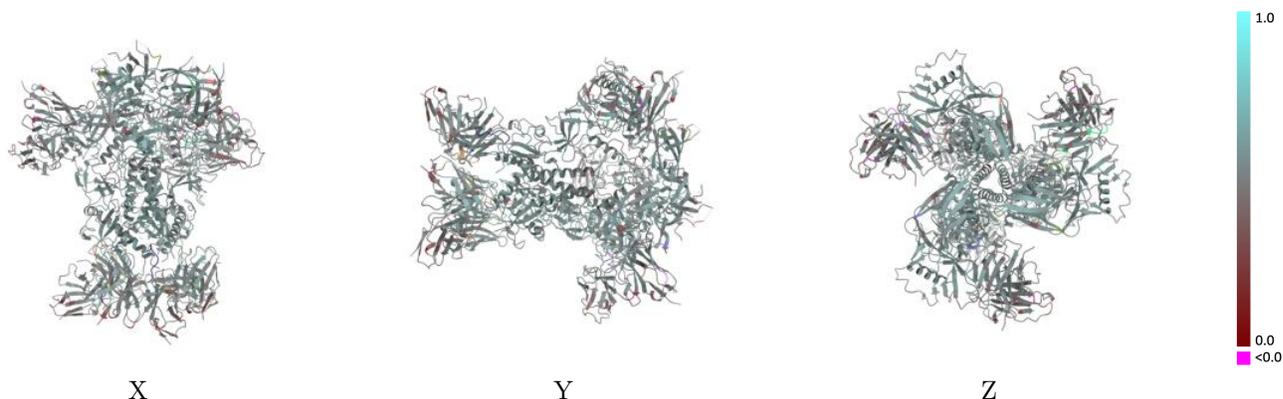
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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
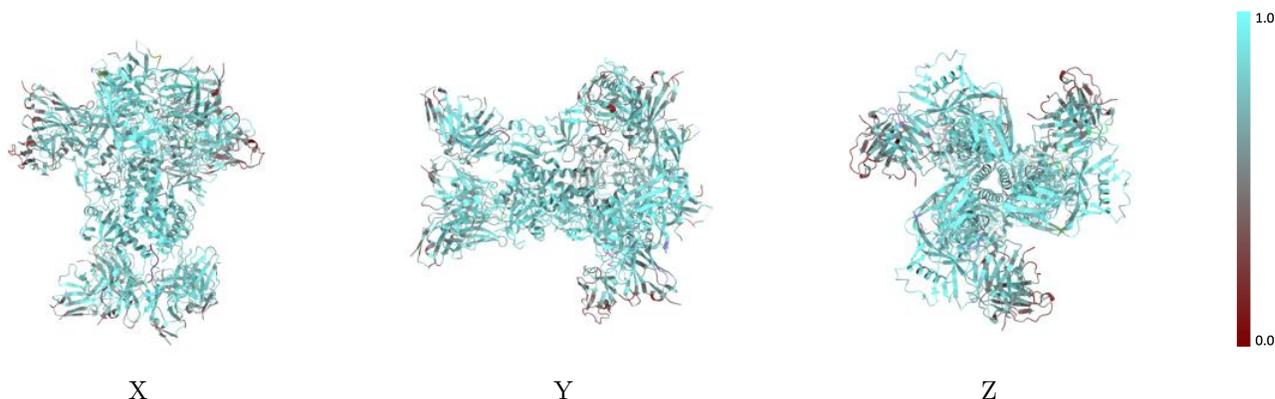
The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.15).

9.4　Atom inclusion ⓘ
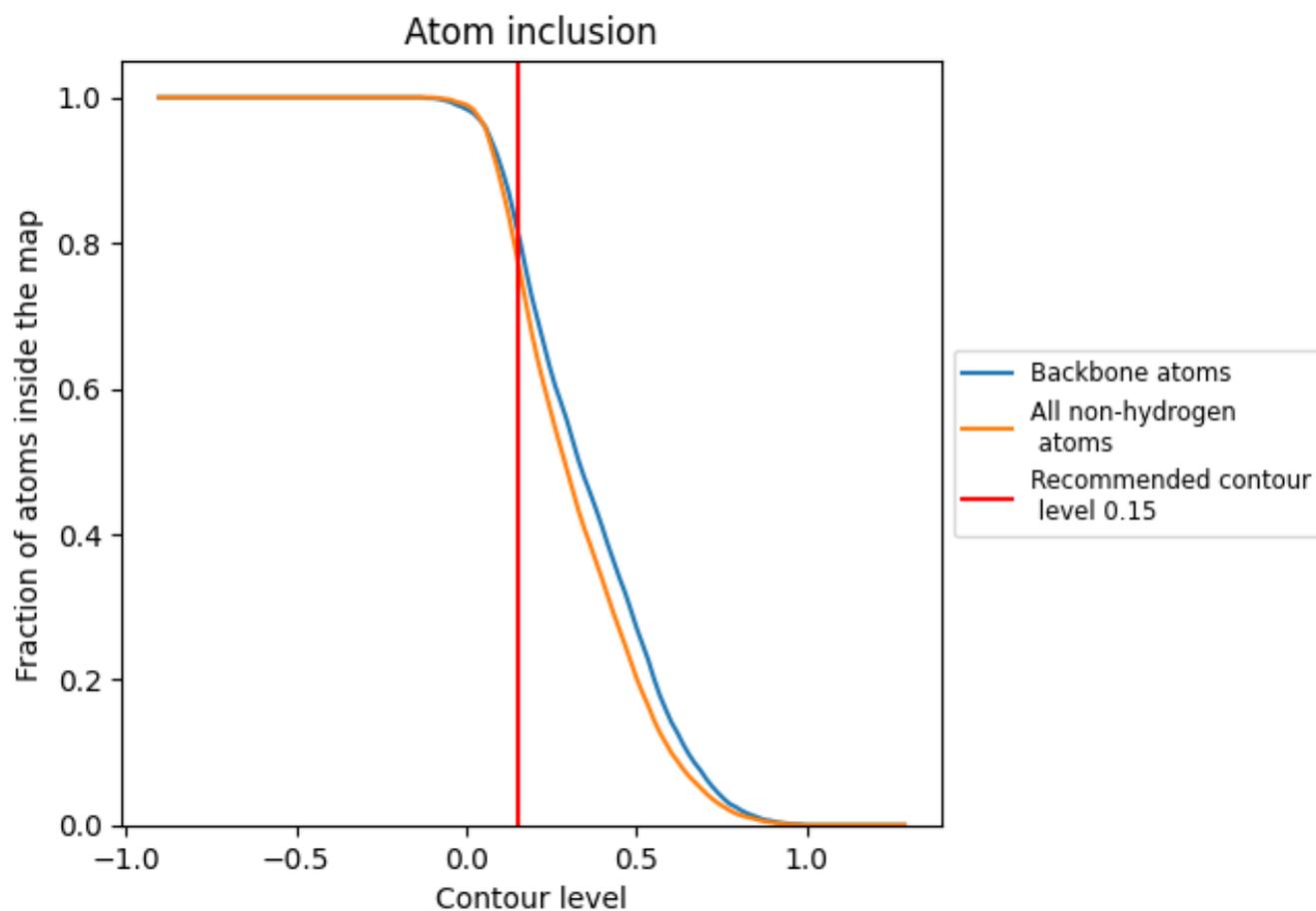
At the recommended contour level, 82% of all backbone atoms, 78% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary (i)

The table lists the average atom inclusion at the recommended contour level (0.15) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.7780	0.5180
A	0.8360	0.5400
B	0.8320	0.5390
C	0.7980	0.5150
D	0.7480	0.4800
E	0.7970	0.5130
F	0.7470	0.4800
G	0.8320	0.5390
H	0.6910	0.4990
I	0.6860	0.4980
J	0.7960	0.5120
K	0.7540	0.4810
L	0.5660	0.4610
M	0.5670	0.4630
N	0.6810	0.4980
O	0.5650	0.4650
P	0.7860	0.5080
Q	0.7500	0.5270
R	0.8970	0.5400
S	0.7500	0.5100
T	0.7500	0.5400
U	0.8720	0.5470
V	0.7500	0.5020
W	0.7140	0.5290
X	0.8460	0.5460

1.0

0.0
<0.0