Full wwPDB EM Validation Report ⓘ

Jul 3, 2023 – 05:45 PM EDT

PDB ID	:	8DMJ
EMDB ID	:	EMD-27541
Title	:	Postfusion Nipah virus fusion protein in complex with Fab 1H1
Authors	:	Byrne, P.O.; Blade, E.G.; McLellan, J.S.
Deposited on	:	2022-07-08
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:

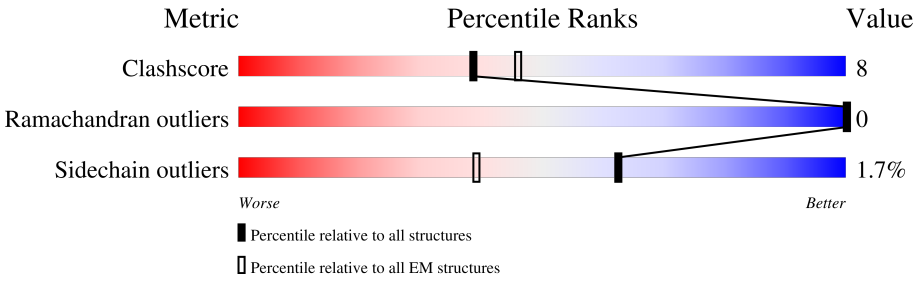
EMDB validation analysis	:	0.0.1.dev50
MolProbity	:	4.02b-467
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ	:	1.9.9
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.34

1 Overall quality at a glance (i)

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	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	158937	4297
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=5% The upper red bar (where present) indicates the fraction of residues that have poor fit to the EM map (all-atom inclusion < 40%). The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	529	47% 13% 39%
1	B	529	5% 47% 13% 39%
1	C	529	5% 49% 11% 39%
2	D	121	25% 85% 14%
2	H	121	25% 80% 20%
3	E	107	23% 84% 16%
3	L	107	22% 83% 16%

2 Entry composition (i)

There are 3 unique types of molecules in this entry. The entry contains 11030 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 Fusion glycoprotein F0,Fusion glycoprotein F1.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	323	Total	C	N	O	S	0	0
			2502	1590	411	484	17		
1	B	323	Total	C	N	O	S	0	0
			2502	1590	411	484	17		
1	C	323	Total	C	N	O	S	0	0
			2502	1590	411	484	17		

There are 249 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	5	MET	-	expression tag	UNP Q9IH63
A	6	TYR	-	expression tag	UNP Q9IH63
A	7	SER	-	expression tag	UNP Q9IH63
A	8	MET	-	expression tag	UNP Q9IH63
A	9	GLN	-	expression tag	UNP Q9IH63
A	10	LEU	-	expression tag	UNP Q9IH63
A	11	ALA	-	expression tag	UNP Q9IH63
A	12	SER	-	expression tag	UNP Q9IH63
A	13	CYS	-	expression tag	UNP Q9IH63
A	14	VAL	-	expression tag	UNP Q9IH63
A	15	THR	-	expression tag	UNP Q9IH63
A	16	LEU	-	expression tag	UNP Q9IH63
A	17	THR	-	expression tag	UNP Q9IH63
A	18	LEU	-	expression tag	UNP Q9IH63
A	19	VAL	-	expression tag	UNP Q9IH63
A	20	LEU	-	expression tag	UNP Q9IH63
A	21	LEU	-	expression tag	UNP Q9IH63
A	22	VAL	-	expression tag	UNP Q9IH63
A	23	ASN	-	expression tag	UNP Q9IH63
A	24	SER	-	expression tag	UNP Q9IH63
A	25	GLN	-	expression tag	UNP Q9IH63
A	114	GLY	-	linker	UNP Q9IH63
A	115	GLY	-	linker	UNP Q9IH63
A	116	SER	-	linker	UNP Q9IH63

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Chain	Residue	Modelled	Actual	Comment	Reference
A	489	LYS	-	expression tag	UNP Q9IH63
A	490	LEU	-	expression tag	UNP Q9IH63
A	491	MET	-	expression tag	UNP Q9IH63
A	492	LYS	-	expression tag	UNP Q9IH63
A	493	GLN	-	expression tag	UNP Q9IH63
A	494	ILE	-	expression tag	UNP Q9IH63
A	495	GLU	-	expression tag	UNP Q9IH63
A	496	ASP	-	expression tag	UNP Q9IH63
A	497	LYS	-	expression tag	UNP Q9IH63
A	498	ILE	-	expression tag	UNP Q9IH63
A	499	GLU	-	expression tag	UNP Q9IH63
A	500	GLU	-	expression tag	UNP Q9IH63
A	501	ILE	-	expression tag	UNP Q9IH63
A	502	LEU	-	expression tag	UNP Q9IH63
A	503	SER	-	expression tag	UNP Q9IH63
A	504	LYS	-	expression tag	UNP Q9IH63
A	505	ILE	-	expression tag	UNP Q9IH63
A	506	TYR	-	expression tag	UNP Q9IH63
A	507	HIS	-	expression tag	UNP Q9IH63
A	508	ILE	-	expression tag	UNP Q9IH63
A	509	GLU	-	expression tag	UNP Q9IH63
A	510	ASN	-	expression tag	UNP Q9IH63
A	511	GLU	-	expression tag	UNP Q9IH63
A	512	ILE	-	expression tag	UNP Q9IH63
A	513	ALA	-	expression tag	UNP Q9IH63
A	514	ARG	-	expression tag	UNP Q9IH63
A	515	ILE	-	expression tag	UNP Q9IH63
A	516	LYS	-	expression tag	UNP Q9IH63
A	517	LYS	-	expression tag	UNP Q9IH63
A	518	LEU	-	expression tag	UNP Q9IH63
A	519	ILE	-	expression tag	UNP Q9IH63
A	520	GLY	-	expression tag	UNP Q9IH63
A	521	GLU	-	expression tag	UNP Q9IH63
A	522	ALA	-	expression tag	UNP Q9IH63
A	523	PRO	-	expression tag	UNP Q9IH63
A	524	GLY	-	expression tag	UNP Q9IH63
A	525	GLY	-	expression tag	UNP Q9IH63
A	526	LEU	-	expression tag	UNP Q9IH63
A	527	VAL	-	expression tag	UNP Q9IH63
A	528	PRO	-	expression tag	UNP Q9IH63
A	529	ARG	-	expression tag	UNP Q9IH63
A	530	GLY	-	expression tag	UNP Q9IH63

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Chain	Residue	Modelled	Actual	Comment	Reference
A	531	SER	-	expression tag	UNP Q9IH63
A	532	HIS	-	expression tag	UNP Q9IH63
A	533	HIS	-	expression tag	UNP Q9IH63
A	534	HIS	-	expression tag	UNP Q9IH63
A	535	HIS	-	expression tag	UNP Q9IH63
A	536	HIS	-	expression tag	UNP Q9IH63
A	537	HIS	-	expression tag	UNP Q9IH63
A	538	SER	-	expression tag	UNP Q9IH63
A	539	ALA	-	expression tag	UNP Q9IH63
A	540	TRP	-	expression tag	UNP Q9IH63
A	541	SER	-	expression tag	UNP Q9IH63
A	542	HIS	-	expression tag	UNP Q9IH63
A	543	PRO	-	expression tag	UNP Q9IH63
A	544	GLN	-	expression tag	UNP Q9IH63
A	545	PHE	-	expression tag	UNP Q9IH63
A	546	GLU	-	expression tag	UNP Q9IH63
A	547	LYS	-	expression tag	UNP Q9IH63
B	5	MET	-	expression tag	UNP Q9IH63
B	6	TYR	-	expression tag	UNP Q9IH63
B	7	SER	-	expression tag	UNP Q9IH63
B	8	MET	-	expression tag	UNP Q9IH63
B	9	GLN	-	expression tag	UNP Q9IH63
B	10	LEU	-	expression tag	UNP Q9IH63
B	11	ALA	-	expression tag	UNP Q9IH63
B	12	SER	-	expression tag	UNP Q9IH63
B	13	CYS	-	expression tag	UNP Q9IH63
B	14	VAL	-	expression tag	UNP Q9IH63
B	15	THR	-	expression tag	UNP Q9IH63
B	16	LEU	-	expression tag	UNP Q9IH63
B	17	THR	-	expression tag	UNP Q9IH63
B	18	LEU	-	expression tag	UNP Q9IH63
B	19	VAL	-	expression tag	UNP Q9IH63
B	20	LEU	-	expression tag	UNP Q9IH63
B	21	LEU	-	expression tag	UNP Q9IH63
B	22	VAL	-	expression tag	UNP Q9IH63
B	23	ASN	-	expression tag	UNP Q9IH63
B	24	SER	-	expression tag	UNP Q9IH63
B	25	GLN	-	expression tag	UNP Q9IH63
B	114	GLY	-	linker	UNP Q9IH63
B	115	GLY	-	linker	UNP Q9IH63
B	116	SER	-	linker	UNP Q9IH63
B	489	LYS	-	expression tag	UNP Q9IH63

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Chain	Residue	Modelled	Actual	Comment	Reference
B	490	LEU	-	expression tag	UNP Q9IH63
B	491	MET	-	expression tag	UNP Q9IH63
B	492	LYS	-	expression tag	UNP Q9IH63
B	493	GLN	-	expression tag	UNP Q9IH63
B	494	ILE	-	expression tag	UNP Q9IH63
B	495	GLU	-	expression tag	UNP Q9IH63
B	496	ASP	-	expression tag	UNP Q9IH63
B	497	LYS	-	expression tag	UNP Q9IH63
B	498	ILE	-	expression tag	UNP Q9IH63
B	499	GLU	-	expression tag	UNP Q9IH63
B	500	GLU	-	expression tag	UNP Q9IH63
B	501	ILE	-	expression tag	UNP Q9IH63
B	502	LEU	-	expression tag	UNP Q9IH63
B	503	SER	-	expression tag	UNP Q9IH63
B	504	LYS	-	expression tag	UNP Q9IH63
B	505	ILE	-	expression tag	UNP Q9IH63
B	506	TYR	-	expression tag	UNP Q9IH63
B	507	HIS	-	expression tag	UNP Q9IH63
B	508	ILE	-	expression tag	UNP Q9IH63
B	509	GLU	-	expression tag	UNP Q9IH63
B	510	ASN	-	expression tag	UNP Q9IH63
B	511	GLU	-	expression tag	UNP Q9IH63
B	512	ILE	-	expression tag	UNP Q9IH63
B	513	ALA	-	expression tag	UNP Q9IH63
B	514	ARG	-	expression tag	UNP Q9IH63
B	515	ILE	-	expression tag	UNP Q9IH63
B	516	LYS	-	expression tag	UNP Q9IH63
B	517	LYS	-	expression tag	UNP Q9IH63
B	518	LEU	-	expression tag	UNP Q9IH63
B	519	ILE	-	expression tag	UNP Q9IH63
B	520	GLY	-	expression tag	UNP Q9IH63
B	521	GLU	-	expression tag	UNP Q9IH63
B	522	ALA	-	expression tag	UNP Q9IH63
B	523	PRO	-	expression tag	UNP Q9IH63
B	524	GLY	-	expression tag	UNP Q9IH63
B	525	GLY	-	expression tag	UNP Q9IH63
B	526	LEU	-	expression tag	UNP Q9IH63
B	527	VAL	-	expression tag	UNP Q9IH63
B	528	PRO	-	expression tag	UNP Q9IH63
B	529	ARG	-	expression tag	UNP Q9IH63
B	530	GLY	-	expression tag	UNP Q9IH63
B	531	SER	-	expression tag	UNP Q9IH63

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Chain	Residue	Modelled	Actual	Comment	Reference
B	532	HIS	-	expression tag	UNP Q9IH63
B	533	HIS	-	expression tag	UNP Q9IH63
B	534	HIS	-	expression tag	UNP Q9IH63
B	535	HIS	-	expression tag	UNP Q9IH63
B	536	HIS	-	expression tag	UNP Q9IH63
B	537	HIS	-	expression tag	UNP Q9IH63
B	538	SER	-	expression tag	UNP Q9IH63
B	539	ALA	-	expression tag	UNP Q9IH63
B	540	TRP	-	expression tag	UNP Q9IH63
B	541	SER	-	expression tag	UNP Q9IH63
B	542	HIS	-	expression tag	UNP Q9IH63
B	543	PRO	-	expression tag	UNP Q9IH63
B	544	GLN	-	expression tag	UNP Q9IH63
B	545	PHE	-	expression tag	UNP Q9IH63
B	546	GLU	-	expression tag	UNP Q9IH63
B	547	LYS	-	expression tag	UNP Q9IH63
C	5	MET	-	expression tag	UNP Q9IH63
C	6	TYR	-	expression tag	UNP Q9IH63
C	7	SER	-	expression tag	UNP Q9IH63
C	8	MET	-	expression tag	UNP Q9IH63
C	9	GLN	-	expression tag	UNP Q9IH63
C	10	LEU	-	expression tag	UNP Q9IH63
C	11	ALA	-	expression tag	UNP Q9IH63
C	12	SER	-	expression tag	UNP Q9IH63
C	13	CYS	-	expression tag	UNP Q9IH63
C	14	VAL	-	expression tag	UNP Q9IH63
C	15	THR	-	expression tag	UNP Q9IH63
C	16	LEU	-	expression tag	UNP Q9IH63
C	17	THR	-	expression tag	UNP Q9IH63
C	18	LEU	-	expression tag	UNP Q9IH63
C	19	VAL	-	expression tag	UNP Q9IH63
C	20	LEU	-	expression tag	UNP Q9IH63
C	21	LEU	-	expression tag	UNP Q9IH63
C	22	VAL	-	expression tag	UNP Q9IH63
C	23	ASN	-	expression tag	UNP Q9IH63
C	24	SER	-	expression tag	UNP Q9IH63
C	25	GLN	-	expression tag	UNP Q9IH63
C	114	GLY	-	linker	UNP Q9IH63
C	115	GLY	-	linker	UNP Q9IH63
C	116	SER	-	linker	UNP Q9IH63
C	489	LYS	-	expression tag	UNP Q9IH63
C	490	LEU	-	expression tag	UNP Q9IH63

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Chain	Residue	Modelled	Actual	Comment	Reference
C	491	MET	-	expression tag	UNP Q9IH63
C	492	LYS	-	expression tag	UNP Q9IH63
C	493	GLN	-	expression tag	UNP Q9IH63
C	494	ILE	-	expression tag	UNP Q9IH63
C	495	GLU	-	expression tag	UNP Q9IH63
C	496	ASP	-	expression tag	UNP Q9IH63
C	497	LYS	-	expression tag	UNP Q9IH63
C	498	ILE	-	expression tag	UNP Q9IH63
C	499	GLU	-	expression tag	UNP Q9IH63
C	500	GLU	-	expression tag	UNP Q9IH63
C	501	ILE	-	expression tag	UNP Q9IH63
C	502	LEU	-	expression tag	UNP Q9IH63
C	503	SER	-	expression tag	UNP Q9IH63
C	504	LYS	-	expression tag	UNP Q9IH63
C	505	ILE	-	expression tag	UNP Q9IH63
C	506	TYR	-	expression tag	UNP Q9IH63
C	507	HIS	-	expression tag	UNP Q9IH63
C	508	ILE	-	expression tag	UNP Q9IH63
C	509	GLU	-	expression tag	UNP Q9IH63
C	510	ASN	-	expression tag	UNP Q9IH63
C	511	GLU	-	expression tag	UNP Q9IH63
C	512	ILE	-	expression tag	UNP Q9IH63
C	513	ALA	-	expression tag	UNP Q9IH63
C	514	ARG	-	expression tag	UNP Q9IH63
C	515	ILE	-	expression tag	UNP Q9IH63
C	516	LYS	-	expression tag	UNP Q9IH63
C	517	LYS	-	expression tag	UNP Q9IH63
C	518	LEU	-	expression tag	UNP Q9IH63
C	519	ILE	-	expression tag	UNP Q9IH63
C	520	GLY	-	expression tag	UNP Q9IH63
C	521	GLU	-	expression tag	UNP Q9IH63
C	522	ALA	-	expression tag	UNP Q9IH63
C	523	PRO	-	expression tag	UNP Q9IH63
C	524	GLY	-	expression tag	UNP Q9IH63
C	525	GLY	-	expression tag	UNP Q9IH63
C	526	LEU	-	expression tag	UNP Q9IH63
C	527	VAL	-	expression tag	UNP Q9IH63
C	528	PRO	-	expression tag	UNP Q9IH63
C	529	ARG	-	expression tag	UNP Q9IH63
C	530	GLY	-	expression tag	UNP Q9IH63
C	531	SER	-	expression tag	UNP Q9IH63
C	532	HIS	-	expression tag	UNP Q9IH63

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Chain	Residue	Modelled	Actual	Comment	Reference
C	533	HIS	-	expression tag	UNP Q9IH63
C	534	HIS	-	expression tag	UNP Q9IH63
C	535	HIS	-	expression tag	UNP Q9IH63
C	536	HIS	-	expression tag	UNP Q9IH63
C	537	HIS	-	expression tag	UNP Q9IH63
C	538	SER	-	expression tag	UNP Q9IH63
C	539	ALA	-	expression tag	UNP Q9IH63
C	540	TRP	-	expression tag	UNP Q9IH63
C	541	SER	-	expression tag	UNP Q9IH63
C	542	HIS	-	expression tag	UNP Q9IH63
C	543	PRO	-	expression tag	UNP Q9IH63
C	544	GLN	-	expression tag	UNP Q9IH63
C	545	PHE	-	expression tag	UNP Q9IH63
C	546	GLU	-	expression tag	UNP Q9IH63
C	547	LYS	-	expression tag	UNP Q9IH63

- Molecule 2 is a protein called antibody 1H1 heavy chain.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	D	121	Total	C	N	O	S	0	0
			934	588	157	184	5		
2	H	121	Total	C	N	O	S	0	0
			934	588	157	184	5		

- Molecule 3 is a protein called antibody 1H1 light chain.

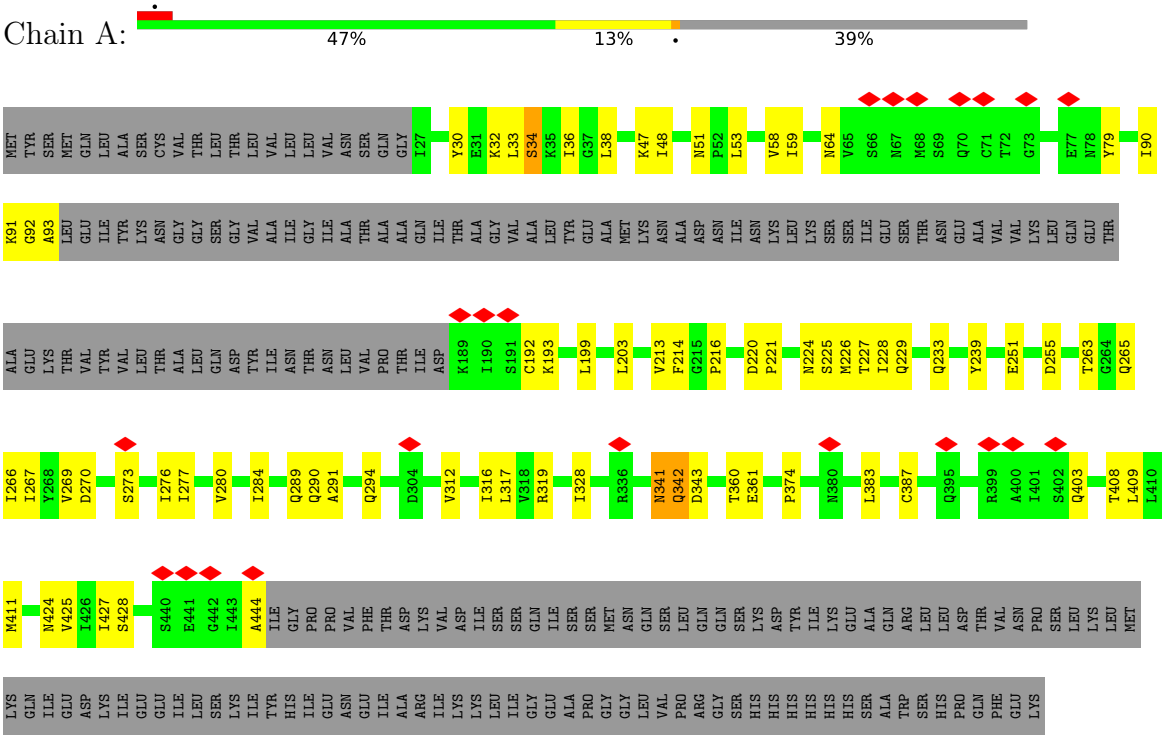
Mol	Chain	Residues	Atoms					AltConf	Trace
3	E	107	Total	C	N	O	S	0	0
			828	528	137	160	3		
3	L	107	Total	C	N	O	S	0	0
			828	528	137	160	3		

3 Residue-property plots (i)

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.

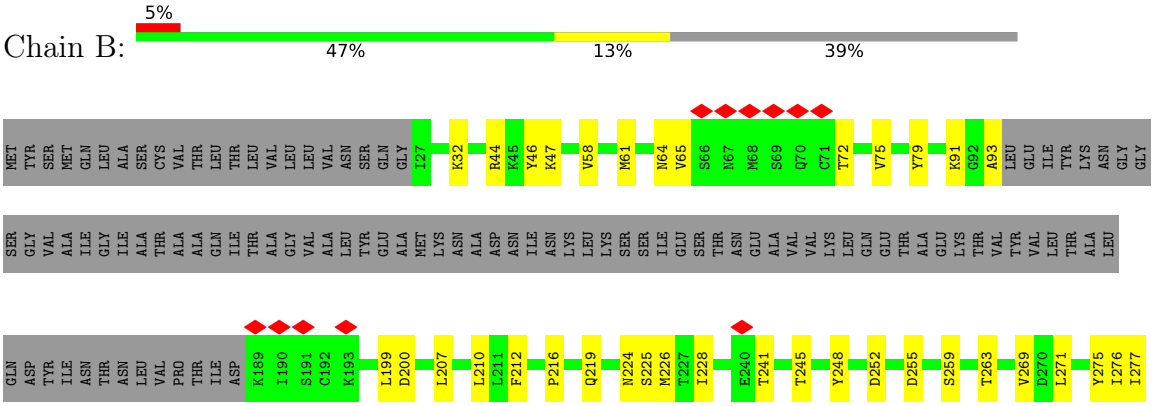
• Molecule 1: Fusion glycoprotein F0,Fusion glycoprotein F1

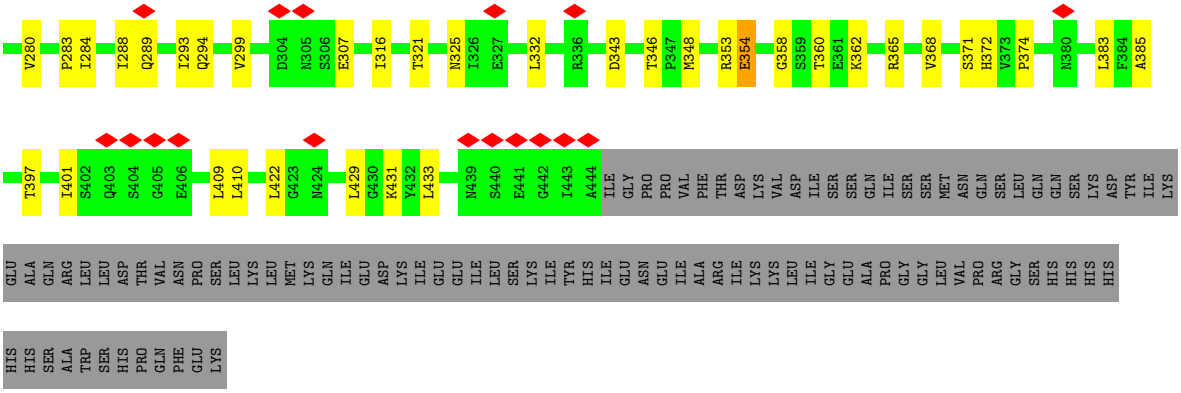
Chain A:



• Molecule 1: Fusion glycoprotein F0,Fusion glycoprotein F1

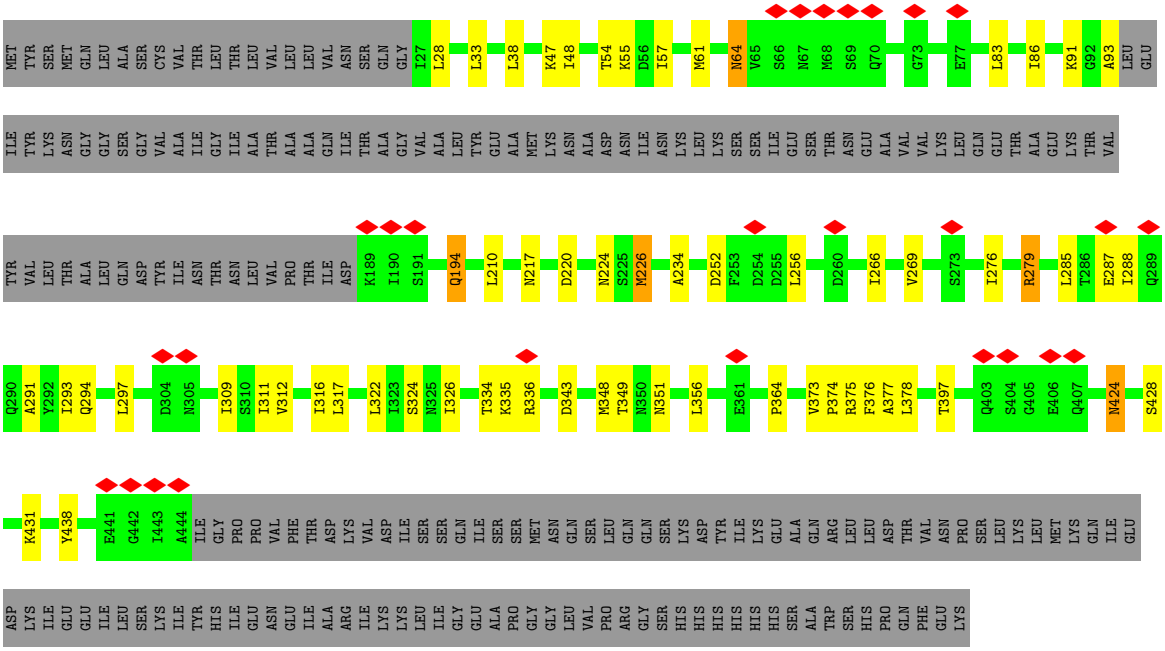
Chain B:





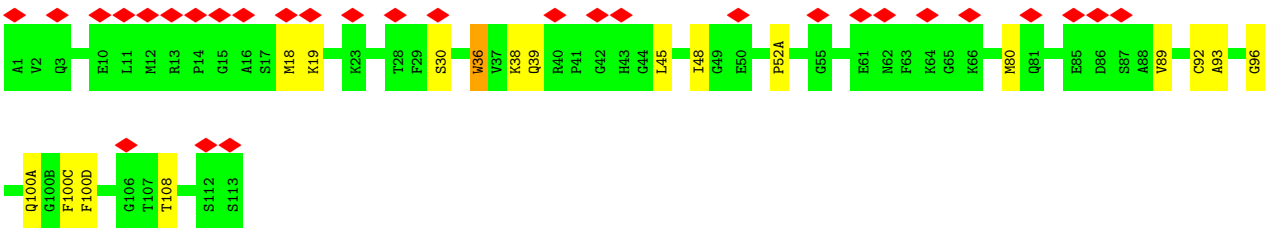
• Molecule 1: Fusion glycoprotein F0,Fusion glycoprotein F1

Chain C:



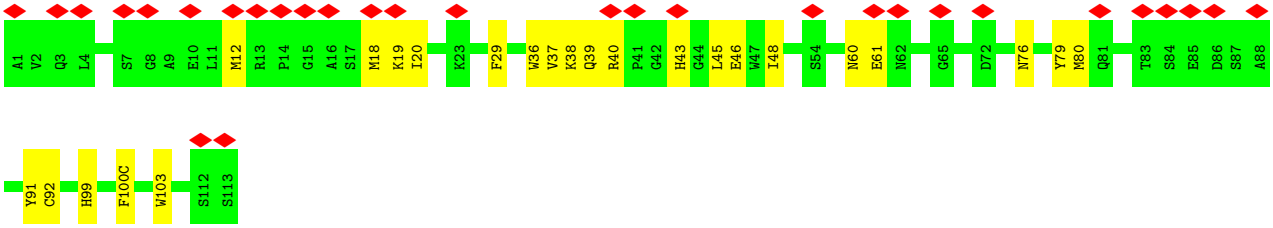
• Molecule 2: antibody 1H1 heavy chain

Chain D:

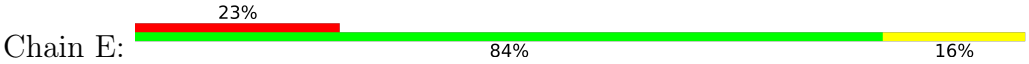


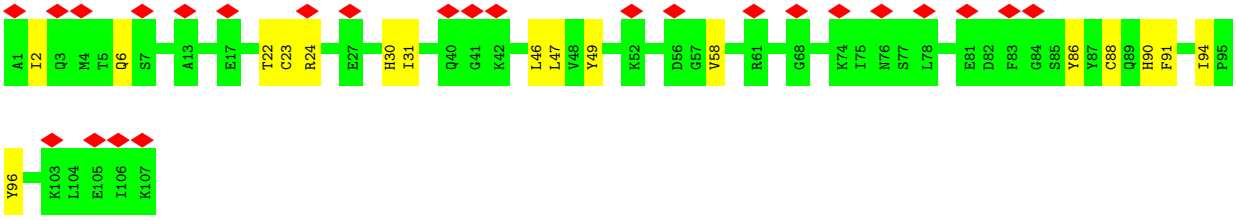
• Molecule 2: antibody 1H1 heavy chain

Chain H:

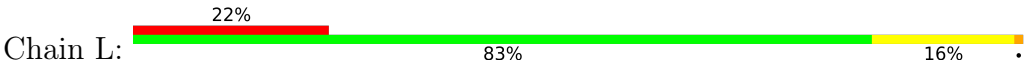


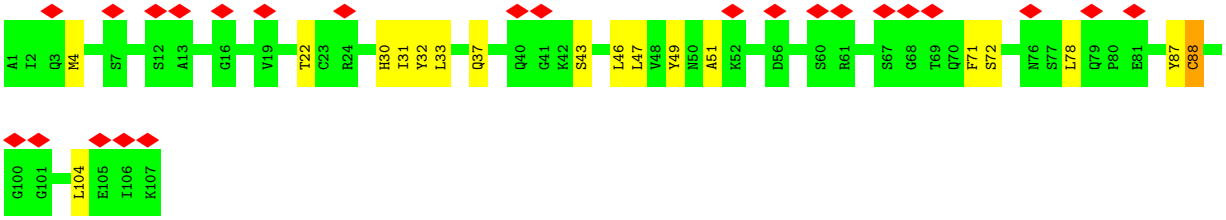
• Molecule 3: antibody 1H1 light chain





• Molecule 3: antibody 1H1 light chain





4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	312805	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	70	Depositor
Minimum defocus (nm)	1500	Depositor
Maximum defocus (nm)	2500	Depositor
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	1.843	Depositor
Minimum map value	-0.028	Depositor
Average map value	0.001	Depositor
Map value standard deviation	0.015	Depositor
Recommended contour level	0.15	Depositor
Map size (Å)	362.88, 362.88, 362.88	wwPDB
Map dimensions	448, 448, 448	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.81, 0.81, 0.81	Depositor

5 Model quality

5.1 Standard geometry

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	0/2540	0.49	1/3447 (0.0%)
1	B	0.28	0/2540	0.48	0/3447
1	C	0.28	0/2540	0.49	0/3447
2	D	0.26	0/959	0.51	0/1297
2	H	0.25	0/959	0.50	0/1297
3	E	0.26	0/850	0.47	0/1152
3	L	0.29	0/850	0.46	0/1152
All	All	0.27	0/11238	0.49	1/15239 (0.0%)

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	199	LEU	CA-CB-CG	5.46	127.86	115.30

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	2502	0	2544	49	0
1	B	2502	0	2544	50	0
1	C	2502	0	2544	52	0
2	D	934	0	870	10	0
2	H	934	0	870	17	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	E	828	0	803	10	0
3	L	828	0	803	15	0
All	All	11030	0	10978	174	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 8.

All (174) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:228:ILE:HD11	1:B:93:ALA:HB3	1.54	0.89
1:C:47:LYS:HG2	1:C:287:GLU:HB3	1.60	0.83
1:A:58:VAL:HG22	1:A:277:ILE:HG12	1.72	0.72
3:L:30:HIS:CG	3:L:31:ILE:H	2.09	0.71
1:A:289:GLN:HE22	1:C:424:ASN:HB2	1.56	0.70
1:C:33:LEU:HD22	1:C:38:LEU:HD22	1.74	0.70
3:E:30:HIS:CG	3:E:31:ILE:H	2.11	0.69
2:H:37:VAL:HG12	2:H:45:LEU:HD22	1.74	0.68
1:B:44:ARG:O	1:B:293:ILE:N	2.26	0.68
1:C:294:GLN:HB3	1:C:316:ILE:HG22	1.76	0.67
2:D:93:ALA:HB1	2:D:100(D):PHE:HB3	1.75	0.67
1:B:383:LEU:HB2	1:B:429:LEU:HD11	1.76	0.67
1:B:374:PRO:HB3	1:C:343:ASP:HB3	1.75	0.67
1:A:59:ILE:HG22	1:C:438:TYR:HB2	1.76	0.66
1:C:348:MET:HE1	1:C:356:LEU:HD22	1.79	0.65
1:A:361:GLU:OE1	1:A:361:GLU:N	2.27	0.65
2:D:30:SER:HA	2:D:52(A):PRO:HB2	1.77	0.64
1:A:343:ASP:HB3	1:C:374:PRO:HB3	1.80	0.64
1:A:91:LYS:HD3	1:A:269:VAL:HB	1.80	0.63
1:C:61:MET:HG2	1:C:210:LEU:HD11	1.81	0.63
1:A:38:LEU:HD11	1:A:312:VAL:HG11	1.80	0.62
3:L:78:LEU:HD21	3:L:104:LEU:HD21	1.81	0.62
1:B:226:MET:HG3	1:B:280:VAL:HG23	1.82	0.62
1:C:288:ILE:HB	1:C:291:ALA:HB3	1.82	0.62
1:B:316:ILE:HD11	1:B:348:MET:HE1	1.82	0.61
1:A:239:TYR:CE1	1:B:93:ALA:HB2	2.36	0.61
2:H:38:LYS:HB2	2:H:48:ILE:HD11	1.82	0.60
2:D:38:LYS:HB2	2:D:48:ILE:HD11	1.83	0.60
1:A:47:LYS:NZ	1:A:255:ASP:OD2	2.35	0.60
1:B:91:LYS:HD2	1:B:271:LEU:HD23	1.84	0.60
1:C:47:LYS:HG2	1:C:287:GLU:CB	2.32	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:79:TYR:HE1	1:B:207:LEU:HD22	1.66	0.59
3:L:46:LEU:HD21	3:L:49:TYR:HB3	1.84	0.59
3:L:37:GLN:HB2	3:L:47:LEU:HD11	1.84	0.59
1:A:48:ILE:HG21	1:C:376:PHE:HE2	1.68	0.59
2:H:40:ARG:HD2	2:H:43:HIS:HB2	1.84	0.59
1:C:217:ASN:ND2	1:C:226:MET:SD	2.74	0.58
1:B:294:GLN:HB3	1:B:316:ILE:HG22	1.85	0.58
1:B:401:ILE:HG21	1:B:410:LEU:HD21	1.85	0.58
1:C:291:ALA:HB1	1:C:317:LEU:HD11	1.86	0.58
1:A:387:CYS:HB2	1:A:403:GLN:HB2	1.85	0.57
1:B:321:THR:O	1:B:353:ARG:NH1	2.33	0.57
3:L:30:HIS:CG	3:L:31:ILE:N	2.73	0.56
1:A:216:PRO:O	1:A:224:ASN:ND2	2.35	0.56
2:H:38:LYS:N	2:H:46:GLU:O	2.30	0.55
1:A:226:MET:HG3	1:A:280:VAL:HG23	1.88	0.55
1:B:91:LYS:HG2	1:B:269:VAL:HB	1.88	0.55
3:E:6:GLN:NE2	3:E:86:TYR:O	2.37	0.55
1:B:46:TYR:HD2	1:B:288:ILE:HG13	1.71	0.55
1:B:241:THR:O	1:B:245:THR:HG22	2.07	0.55
1:A:30:TYR:OH	1:A:294:GLN:NE2	2.40	0.54
1:B:46:TYR:CD2	1:B:288:ILE:HG13	2.42	0.54
1:C:309:ILE:HD12	1:C:373:VAL:HB	1.89	0.54
1:B:433:LEU:HB2	1:C:55:LYS:HG3	1.89	0.54
1:B:216:PRO:O	1:B:224:ASN:ND2	2.40	0.54
1:B:299:VAL:HB	1:B:409:LEU:HD21	1.89	0.54
1:A:30:TYR:O	1:A:34:SER:HB3	2.08	0.54
1:A:53:LEU:HD22	1:C:431:LYS:HB3	1.90	0.54
3:L:30:HIS:CD2	3:L:31:ILE:HG12	2.43	0.54
2:H:12:MET:SD	2:H:12:MET:N	2.81	0.53
1:B:354:GLU:HB3	1:B:362:LYS:HE3	1.91	0.53
1:C:54:THR:HG23	1:C:279:ARG:HD2	1.91	0.53
1:C:38:LEU:HG	1:C:312:VAL:HG21	1.91	0.53
1:B:248:TYR:OH	1:B:283:PRO:O	2.17	0.53
2:D:96:GLY:HA3	2:D:100(A):GLN:HB3	1.89	0.53
1:A:383:LEU:HD13	1:A:427:ILE:HG21	1.89	0.53
1:B:58:VAL:HG22	1:B:277:ILE:HG12	1.90	0.52
1:B:225:SER:HA	1:B:263:THR:HA	1.91	0.52
1:A:424:ASN:HB2	1:B:289:GLN:HG3	1.91	0.52
3:L:33:LEU:HD13	3:L:71:PHE:CG	2.45	0.52
2:D:36:TRP:CZ3	2:D:92:CYS:HB3	2.44	0.52
1:C:28:LEU:HD22	1:C:356:LEU:HB3	1.90	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:291:ALA:HB1	1:A:317:LEU:HD11	1.92	0.52
1:A:374:PRO:HB3	1:B:343:ASP:HB3	1.91	0.52
1:B:61:MET:HE1	1:B:276:ILE:HD12	1.92	0.51
1:A:225:SER:HA	1:A:263:THR:HA	1.93	0.51
1:A:408:THR:HG23	1:A:409:LEU:HD13	1.92	0.50
1:C:397:THR:HA	3:E:94:ILE:HG12	1.93	0.50
3:E:22:THR:HG23	3:E:24:ARG:HH12	1.75	0.50
1:A:270:ASP:OD2	1:A:273:SER:OG	2.29	0.50
1:A:229:GLN:O	1:A:233:GLN:HG2	2.11	0.50
2:H:19:LYS:HE2	2:H:79:TYR:HB3	1.93	0.50
1:C:47:LYS:NZ	1:C:252:ASP:OD1	2.41	0.49
2:D:36:TRP:CD2	2:D:80:MET:HE2	2.48	0.49
1:A:213:VAL:O	1:A:227:THR:OG1	2.22	0.49
1:A:92:GLY:O	1:A:93:ALA:C	2.52	0.48
1:A:227:THR:HG22	1:B:219:GLN:HB3	1.95	0.48
2:H:91:TYR:HD2	2:H:103:TRP:HE3	1.60	0.48
1:B:228:ILE:HD11	1:C:93:ALA:CB	2.43	0.48
2:H:45:LEU:HB2	3:L:87:TYR:CE2	2.49	0.47
1:A:79:TYR:CD2	1:A:203:LEU:HB3	2.50	0.47
1:C:47:LYS:HG2	1:C:287:GLU:CA	2.45	0.47
1:C:83:LEU:HD23	1:C:83:LEU:HA	1.76	0.46
1:C:256:LEU:HG	1:C:285:LEU:HD11	1.97	0.46
3:L:4:MET:HE3	3:L:88:CYS:SG	2.55	0.46
1:B:91:LYS:CD	1:B:271:LEU:HD23	2.45	0.46
1:B:75:VAL:HG11	1:B:199:LEU:HD23	1.97	0.46
1:C:57:ILE:HD11	1:C:234:ALA:HB2	1.98	0.46
1:A:32:LYS:O	1:A:36:ILE:HG12	2.16	0.46
3:L:30:HIS:CD2	3:L:31:ILE:H	2.33	0.46
1:B:397:THR:HG21	2:H:99:HIS:ND1	2.31	0.46
1:A:33:LEU:HD22	1:A:38:LEU:HD12	1.97	0.45
1:B:32:LYS:HE2	1:B:358:GLY:O	2.16	0.45
1:A:193:LYS:HB2	1:C:194:GLN:NE2	2.32	0.45
1:A:266:ILE:HD12	1:A:276:ILE:HG21	1.99	0.45
1:B:372:HIS:N	1:C:324:SER:OG	2.40	0.45
1:A:90:ILE:HG23	1:A:221:PRO:HB3	1.98	0.45
1:A:428:SER:HB3	1:B:284:ILE:HD13	1.98	0.45
1:B:307:GLU:HG2	1:B:368:VAL:HG11	1.99	0.45
1:C:91:LYS:HB2	1:C:269:VAL:HB	1.99	0.45
1:C:297:LEU:HD12	1:C:377:ALA:HB1	1.98	0.45
2:D:89:VAL:HA	2:D:108:THR:HA	1.98	0.45
1:C:48:ILE:HD11	1:C:343:ASP:HB2	1.99	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:349:THR:HG22	1:C:351:ASN:H	1.81	0.45
1:A:220:ASP:HB3	1:A:224:ASN:HB2	1.99	0.45
1:C:54:THR:CG2	1:C:279:ARG:HD2	2.47	0.44
1:A:265:GLN:HG2	1:A:267:ILE:HG23	2.00	0.44
1:A:425:VAL:HA	1:B:289:GLN:NE2	2.33	0.44
1:C:47:LYS:HG2	1:C:287:GLU:HA	1.98	0.44
1:B:385:ALA:HB1	1:B:422:LEU:HD21	1.99	0.44
3:L:22:THR:HA	3:L:72:SER:HA	1.99	0.44
2:H:38:LYS:O	2:H:46:GLU:N	2.41	0.43
2:H:100(C):PHE:CG	3:L:49:TYR:HB2	2.53	0.43
1:C:47:LYS:HA	1:C:287:GLU:HA	2.01	0.43
1:C:311:ILE:HB	1:C:364:PRO:HB2	2.00	0.43
2:H:29:PHE:CD2	2:H:76:ASN:HA	2.53	0.43
1:C:375:ARG:HG3	1:C:375:ARG:HH11	1.84	0.43
3:E:30:HIS:CG	3:E:31:ILE:N	2.78	0.43
1:A:47:LYS:NZ	1:A:251:GLU:OE2	2.45	0.43
1:C:220:ASP:HB3	1:C:224:ASN:HB2	2.01	0.43
1:B:46:TYR:HB3	1:B:288:ILE:CG1	2.48	0.43
2:D:100(C):PHE:HB3	3:E:91:PHE:CE2	2.54	0.43
3:E:91:PHE:HA	3:E:96:TYR:CD1	2.53	0.43
1:A:36:ILE:O	1:A:36:ILE:HG22	2.19	0.43
1:B:61:MET:HE2	1:B:210:LEU:HD21	2.00	0.43
1:A:294:GLN:N	1:A:316:ILE:O	2.48	0.42
2:H:20:ILE:HD12	2:H:80:MET:HE3	2.01	0.42
2:D:18:MET:SD	2:D:19:LYS:N	2.92	0.42
2:D:39:GLN:HB2	2:D:45:LEU:HD23	2.00	0.42
2:H:39:GLN:HB2	2:H:45:LEU:HD23	2.01	0.42
1:B:72:THR:O	1:B:75:VAL:HG12	2.19	0.42
1:A:284:ILE:HG21	1:C:428:SER:HB3	2.02	0.42
1:C:334:THR:HG22	1:C:336:ARG:H	1.84	0.42
3:E:2:ILE:HD12	3:E:90:HIS:CD2	2.54	0.42
1:A:290:GLN:O	1:A:319:ARG:HA	2.20	0.41
1:B:47:LYS:NZ	1:B:255:ASP:OD2	2.49	0.41
2:H:36:TRP:CZ2	2:H:92:CYS:HB3	2.55	0.41
1:C:293:ILE:HD12	1:C:326:ILE:HG21	2.02	0.41
1:A:341:ASN:HB3	1:A:342:GLN:OE1	2.20	0.41
1:B:360:THR:O	1:B:365:ARG:NH2	2.42	0.41
1:A:36:ILE:HG13	1:A:360:THR:HB	2.01	0.41
1:A:51:ASN:ND2	1:C:378:LEU:HD22	2.34	0.41
1:B:431:LYS:HB2	1:B:431:LYS:HE2	1.84	0.41
3:L:30:HIS:C	3:L:32:TYR:H	2.24	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:444:ALA:HB2	1:B:65:VAL:HA	2.03	0.41
1:B:383:LEU:HD22	1:B:385:ALA:HB2	2.03	0.41
1:C:33:LEU:HB3	1:C:38:LEU:HB2	2.01	0.41
1:C:252:ASP:HB3	1:C:285:LEU:HD12	2.03	0.41
1:B:371:SER:N	1:C:322:LEU:HD12	2.36	0.41
1:C:47:LYS:HE2	1:C:287:GLU:HB3	2.02	0.41
2:H:60:ASN:OD1	2:H:61:GLU:N	2.54	0.41
3:L:31:ILE:HA	3:L:51:ALA:HB2	2.03	0.41
1:A:214:PHE:HE2	1:C:438:TYR:HD1	1.69	0.41
1:B:47:LYS:NZ	1:B:252:ASP:OD1	2.47	0.41
3:E:47:LEU:HA	3:E:58:VAL:HG21	2.02	0.41
1:C:64:ASN:N	1:C:64:ASN:OD1	2.54	0.40
3:E:46:LEU:HD21	3:E:49:TYR:HB3	2.03	0.40
1:B:259:SER:HB2	1:B:332:LEU:HD13	2.03	0.40
1:B:325:ASN:HB2	1:B:346:THR:OG1	2.21	0.40
1:C:431:LYS:HB3	1:C:431:LYS:HE2	1.96	0.40
2:H:91:TYR:HE2	3:L:43:SER:HA	1.86	0.40
1:C:266:ILE:HD11	1:C:276:ILE:HD12	2.02	0.40
1:A:328:ILE:O	1:A:328:ILE:HG12	2.22	0.40
1:B:212:PHE:CE2	1:C:86:ILE:HG23	2.57	0.40

There are no symmetry-related clashes.

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM entries.

The Analysed column shows the number of residues for which the backbone conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	319/529 (60%)	308 (97%)	11 (3%)	0	100	100
1	B	319/529 (60%)	311 (98%)	8 (2%)	0	100	100
1	C	319/529 (60%)	304 (95%)	15 (5%)	0	100	100
2	D	119/121 (98%)	117 (98%)	2 (2%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
2	H	119/121 (98%)	118 (99%)	1 (1%)	0	100	100
3	E	105/107 (98%)	102 (97%)	3 (3%)	0	100	100
3	L	105/107 (98%)	102 (97%)	3 (3%)	0	100	100
All	All	1405/2043 (69%)	1362 (97%)	43 (3%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains (i)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM entries.

The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	292/471 (62%)	286 (98%)	6 (2%)	53	79
1	B	292/471 (62%)	288 (99%)	4 (1%)	67	86
1	C	292/471 (62%)	286 (98%)	6 (2%)	53	79
2	D	96/96 (100%)	95 (99%)	1 (1%)	76	90
2	H	96/96 (100%)	95 (99%)	1 (1%)	76	90
3	E	91/91 (100%)	89 (98%)	2 (2%)	52	79
3	L	91/91 (100%)	90 (99%)	1 (1%)	73	88
All	All	1250/1787 (70%)	1229 (98%)	21 (2%)	62	83

All (21) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	34	SER
1	A	64	ASN
1	A	192	CYS
1	A	341	ASN
1	A	342	GLN
1	A	411	MET
1	B	64	ASN
1	B	200	ASP
1	B	275	TYR

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Mol	Chain	Res	Type
1	B	354	GLU
1	C	64	ASN
1	C	194	GLN
1	C	226	MET
1	C	279	ARG
1	C	335	LYS
1	C	424	ASN
2	D	36	TRP
3	E	23	CYS
3	E	88	CYS
2	H	18	MET
3	L	88	CYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (11) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	219	GLN
1	A	294	GLN
1	A	325	ASN
1	B	289	GLN
1	B	414	ASN
1	B	424	ASN
1	C	194	GLN
1	C	325	ASN
1	C	393	GLN
1	C	424	ASN
3	L	30	HIS

5.3.3 RNA (i)

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains (i)

There are no non-standard protein/DNA/RNA residues in this entry.

5.5 Carbohydrates (i)

There are no monosaccharides in this entry.

5.6 Ligand geometry (i)

There are no ligands in this entry.

5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

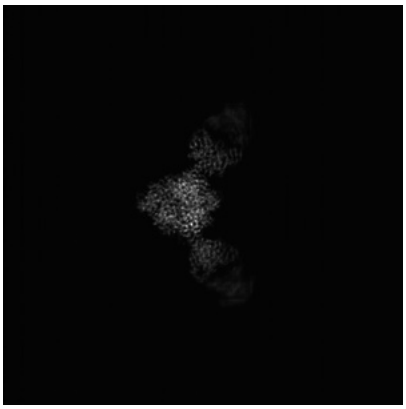
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-27541. These allow visual inspection of the internal detail of the map and identification of artifacts.

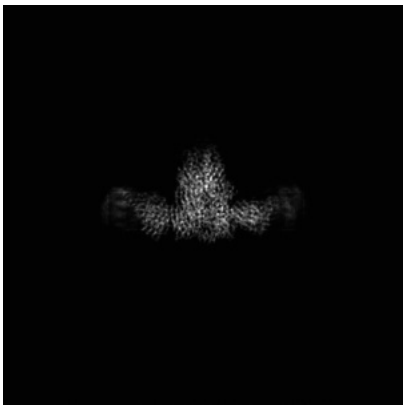
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

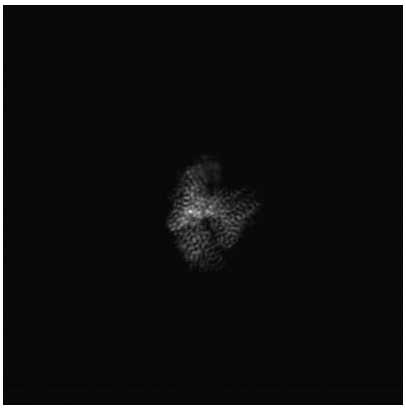
6.1.1 Primary map



X

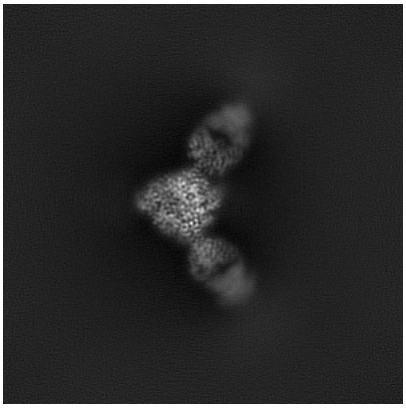


Y

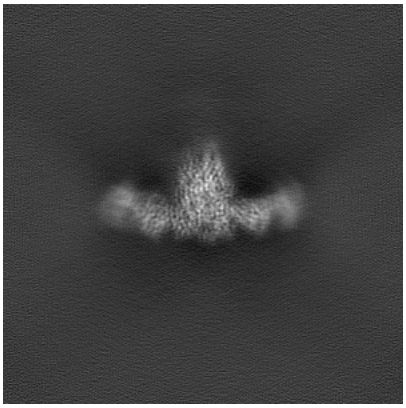


Z

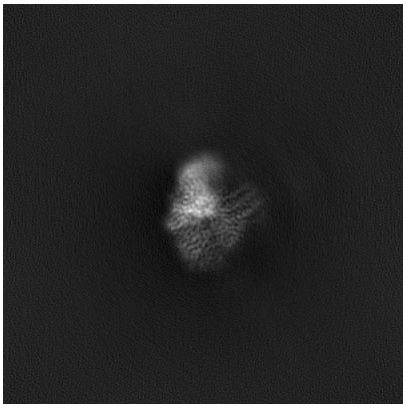
6.1.2 Raw map



X



Y



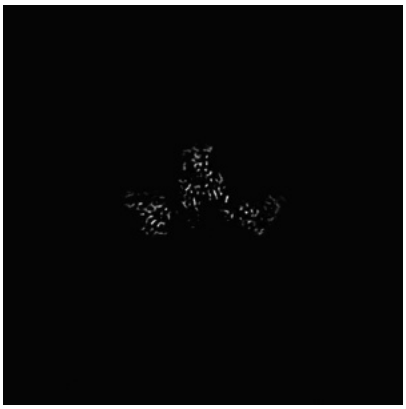
Z

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

6.2 Central slices (i)

6.2.1 Primary map

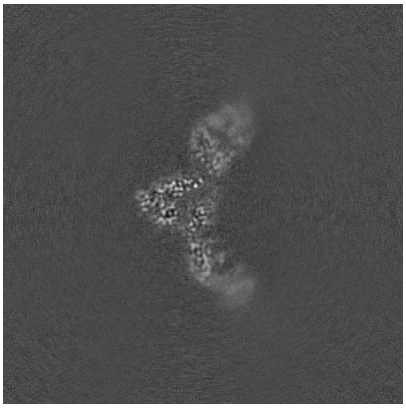
X Index: 224



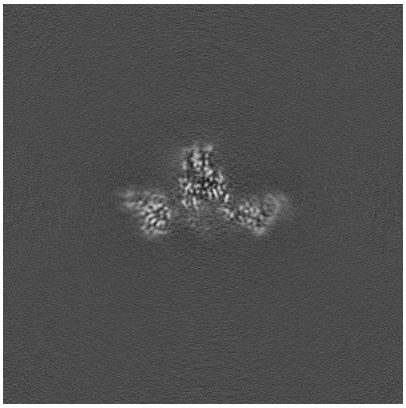
Y Index: 224

Z Index: 224

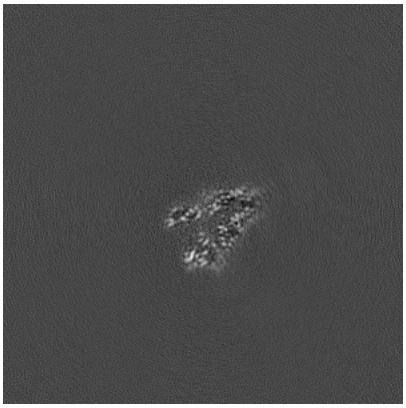
6.2.2 Raw map



X Index: 224



Y Index: 224



Z Index: 224

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

6.3 Largest variance slices (i)

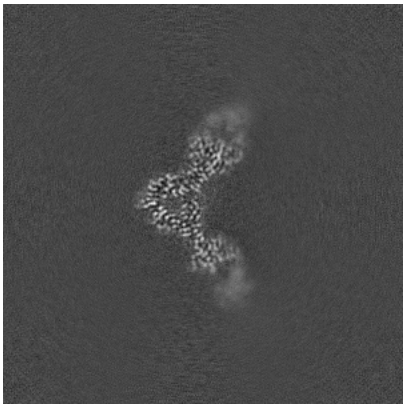
6.3.1 Primary map

X Index: 211

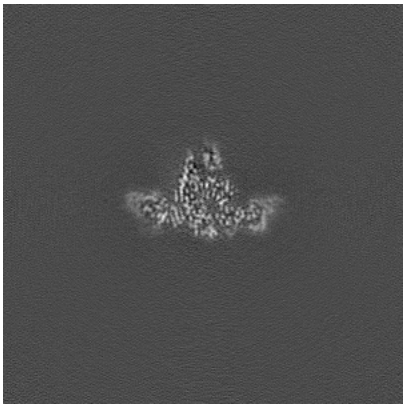
Y Index: 216

Z Index: 227

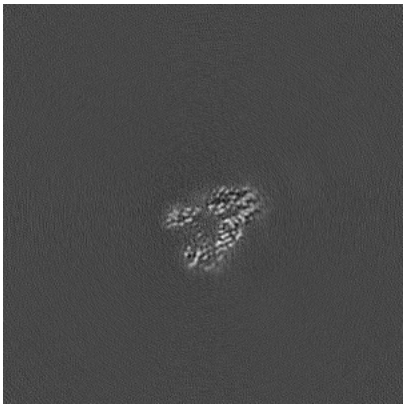
6.3.2 Raw map



X Index: 212



Y Index: 216

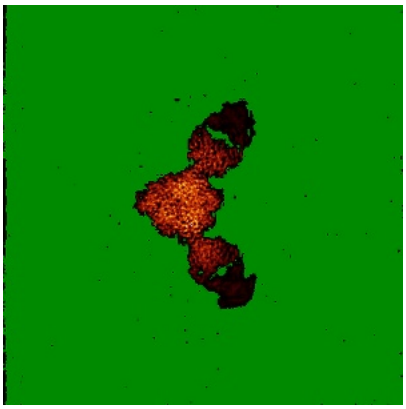


Z Index: 227

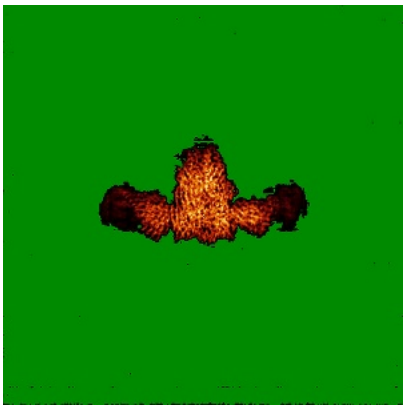
The images above show the largest variance slices of the map in three orthogonal directions.

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

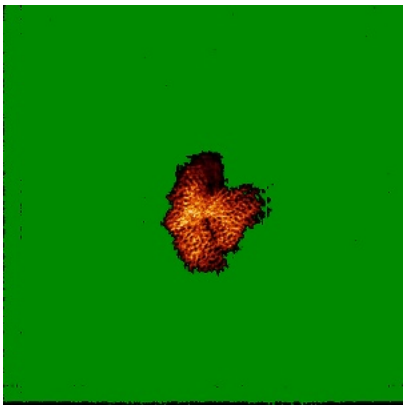
6.4.1 Primary map



X

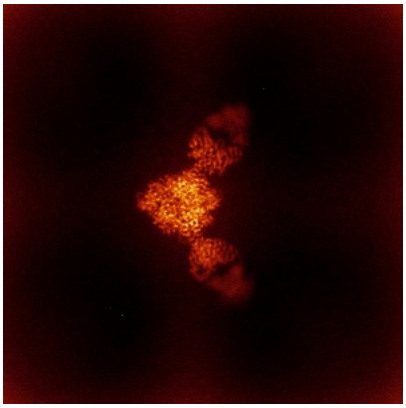


Y

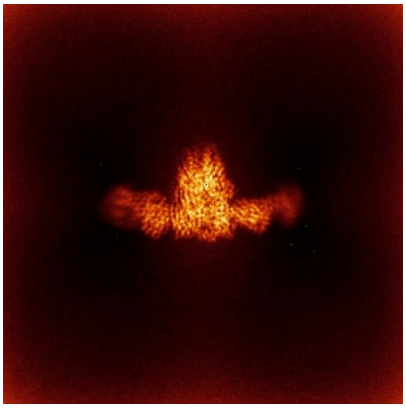


Z

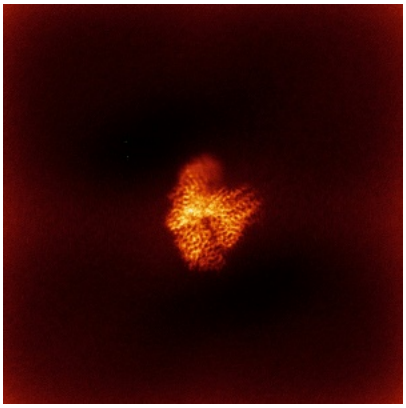
6.4.2 Raw map



X



Y



Z

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

6.5 Orthogonal surface views (i)

6.5.1 Primary map

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.

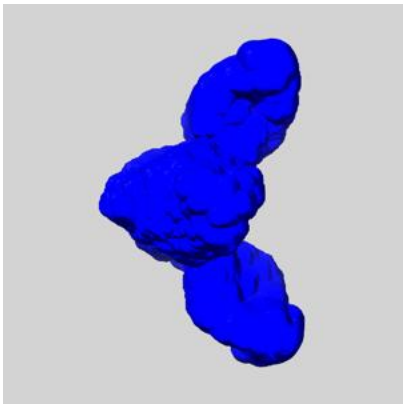
6.6 Mask visualisation (i)

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

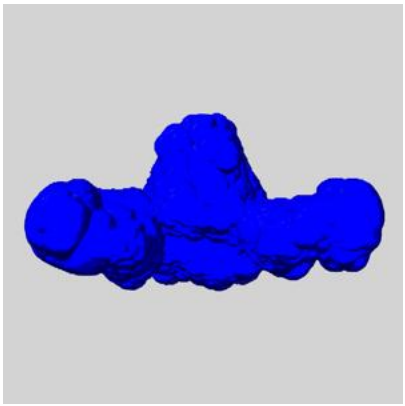
A mask typically either:

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

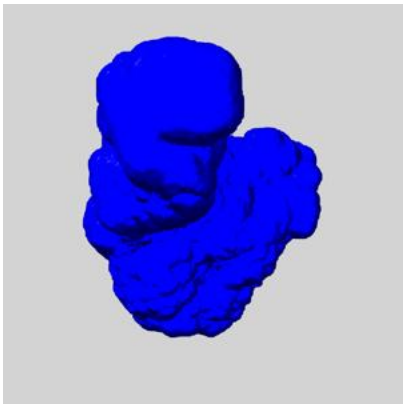
6.6.1 emd_27541_msk_1.map (i)



X



Y

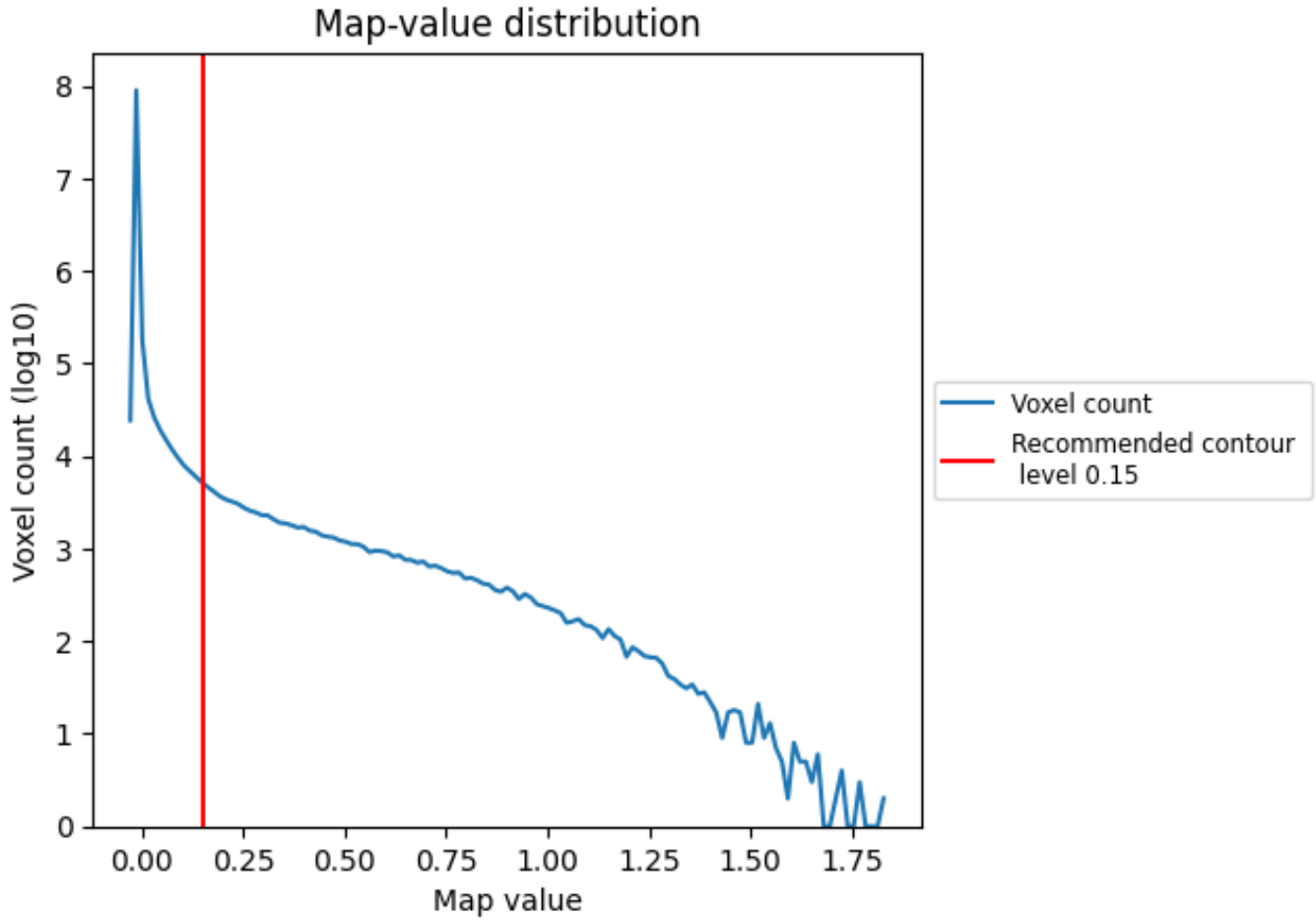


Z

7 Map analysis

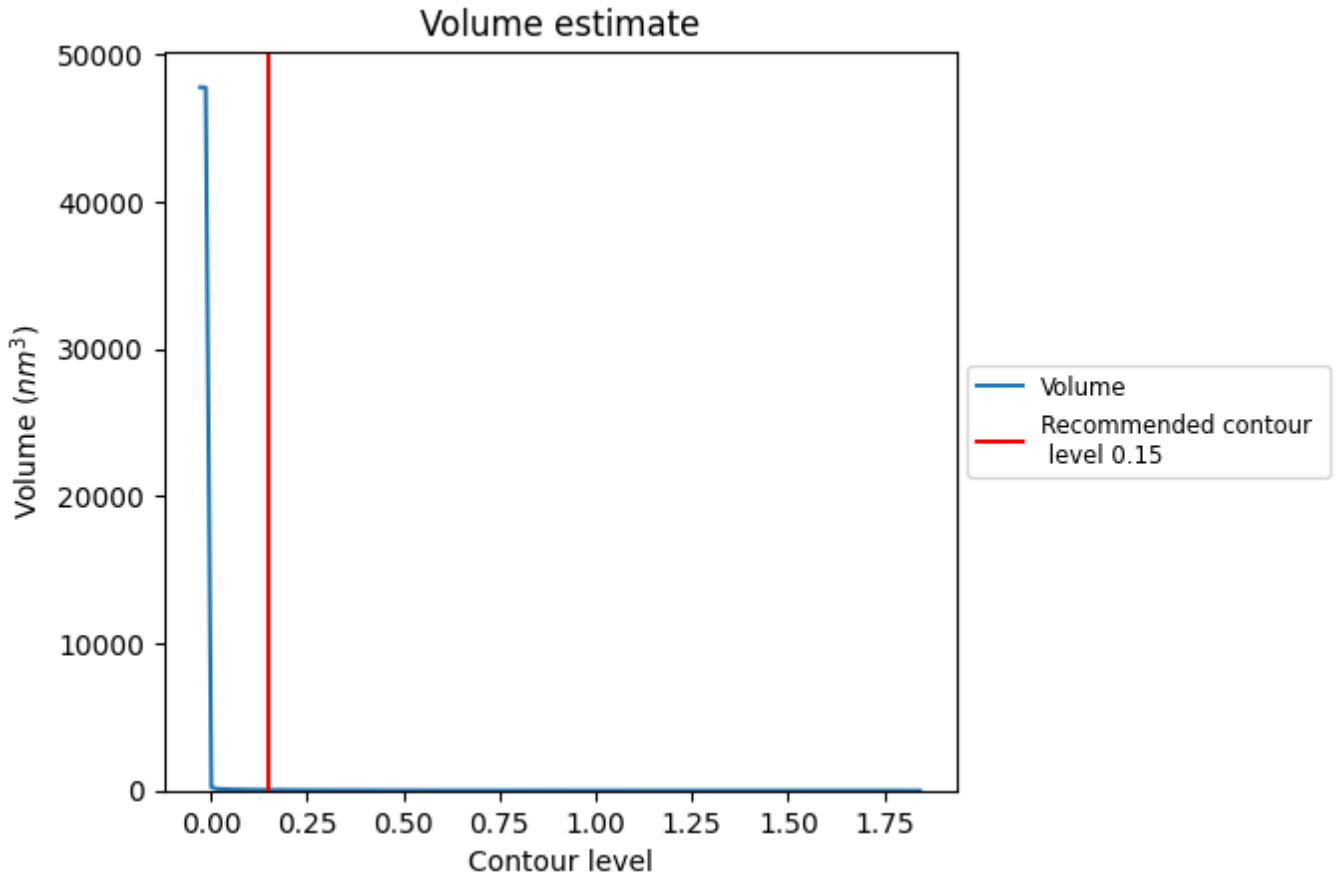
This section contains the results of statistical analysis of the map.

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.

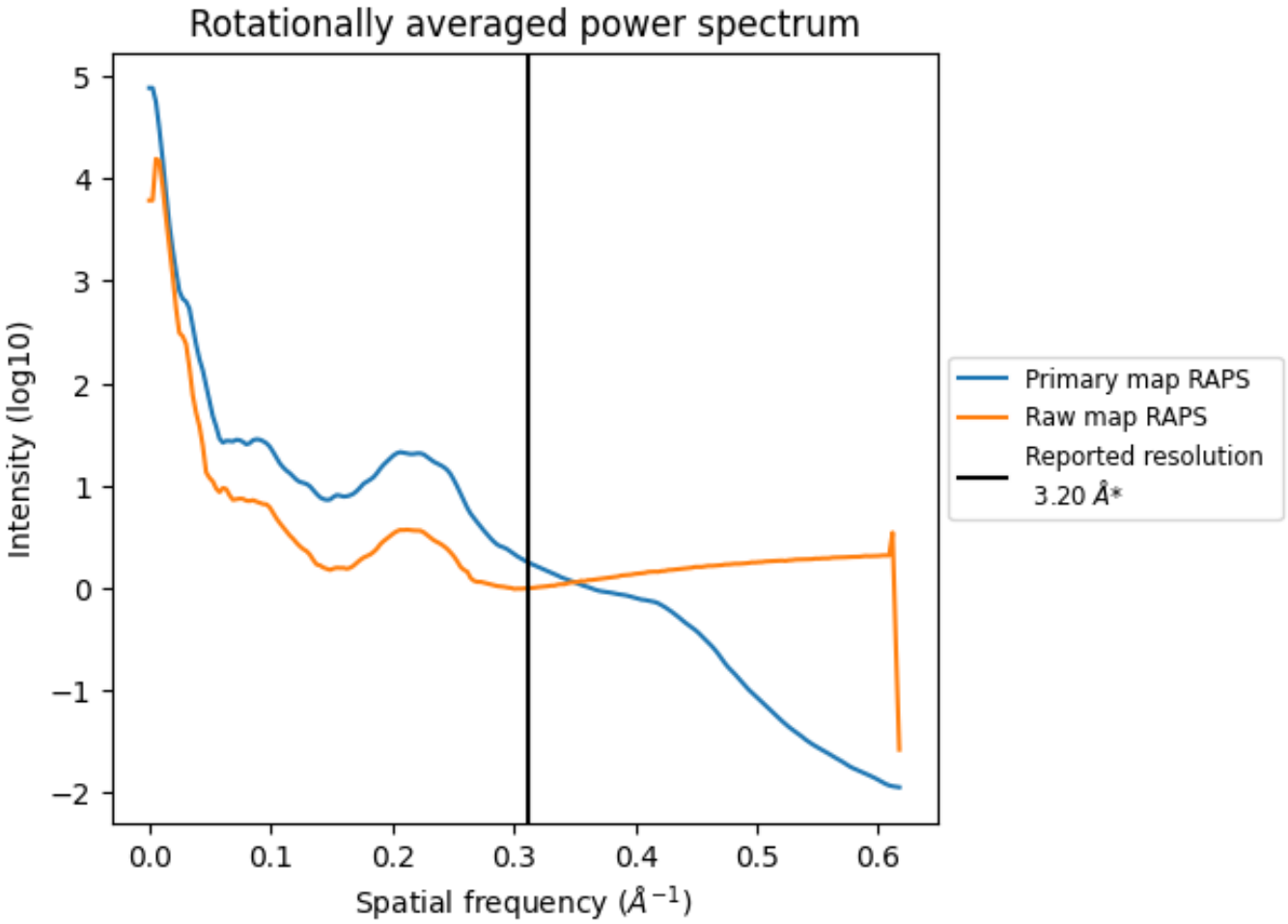
7.2 Volume estimate



The volume at the recommended contour level is 44 nm^3; this corresponds to an approximate mass of 40 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 (i)

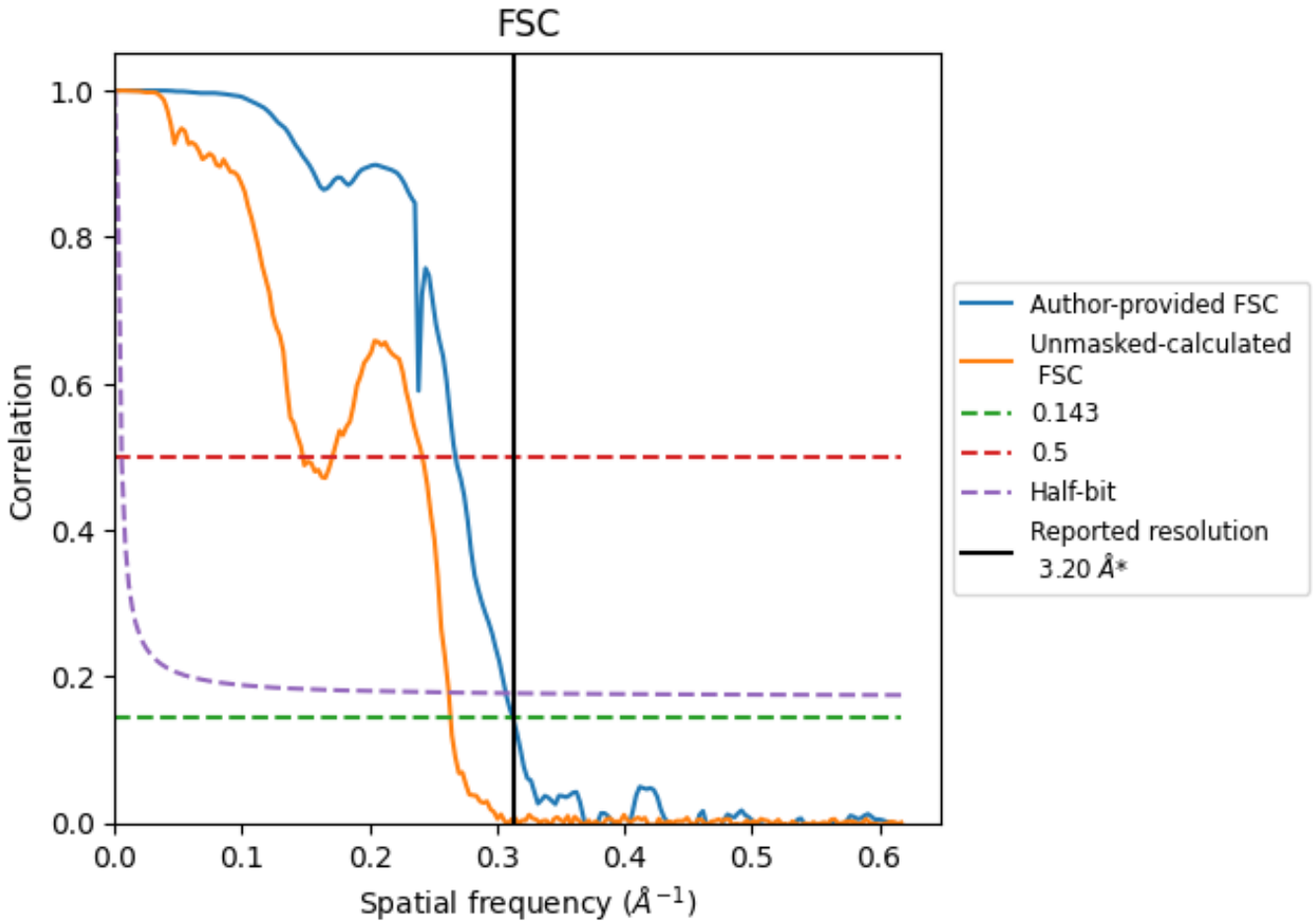


*Reported resolution corresponds to spatial frequency of 0.312 Å^{-1}

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 0.312 $Å^{-1}$

8.2 Resolution estimates (i)

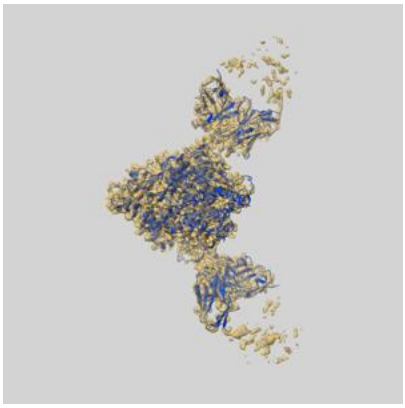
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.20	-	-
Author-provided FSC curve	3.20	3.74	3.26
Unmasked-calculated*	3.79	6.78	3.82

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

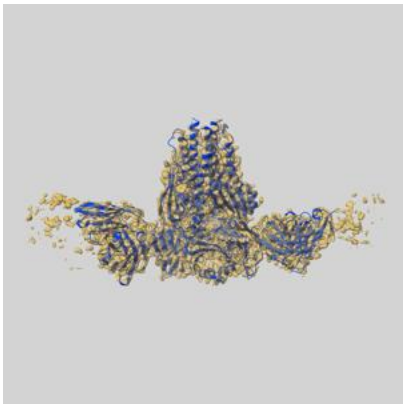
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-27541 and PDB model 8DMJ. Per-residue inclusion information can be found in section 3 on page 10.

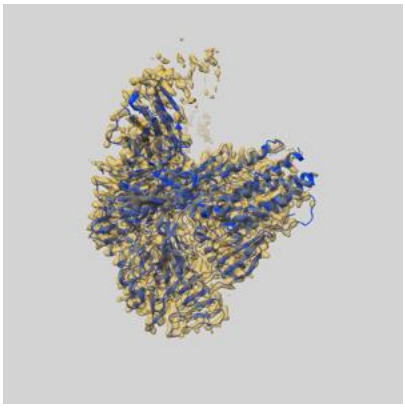
9.1 Map-model overlay



X



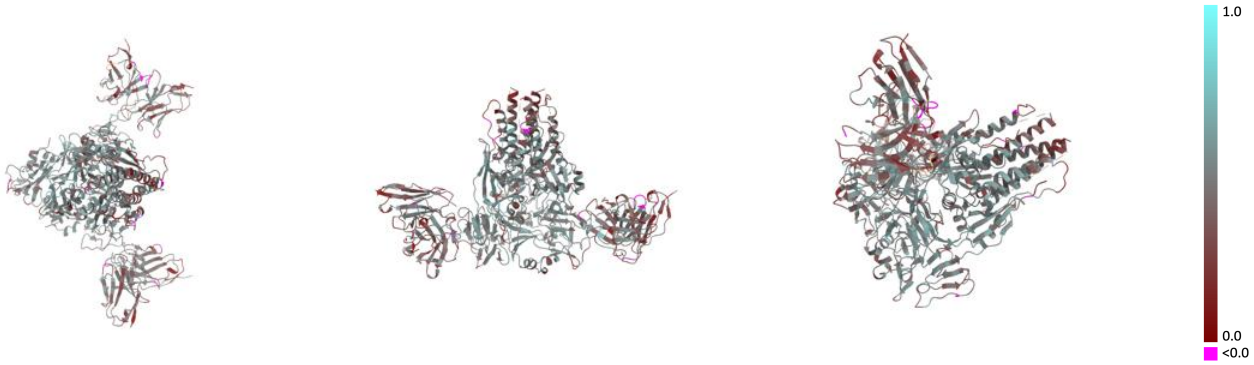
Y



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.

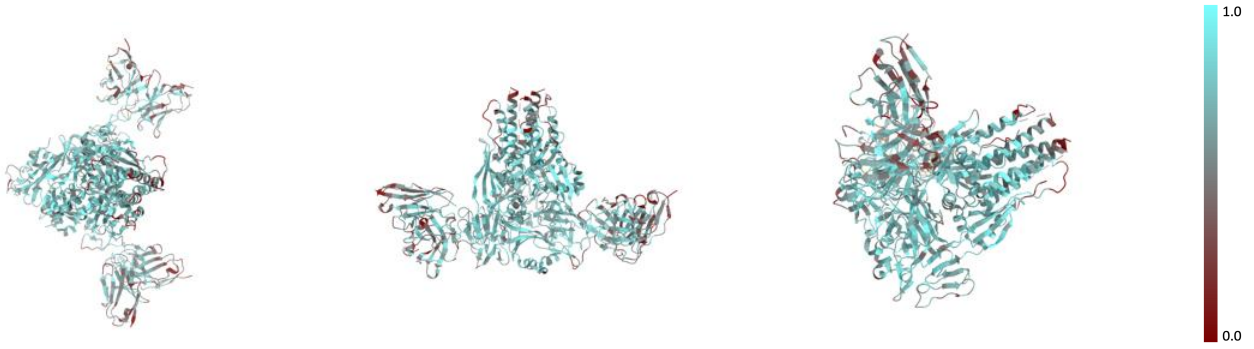
9.2 Q-score mapped to coordinate model (i)



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.

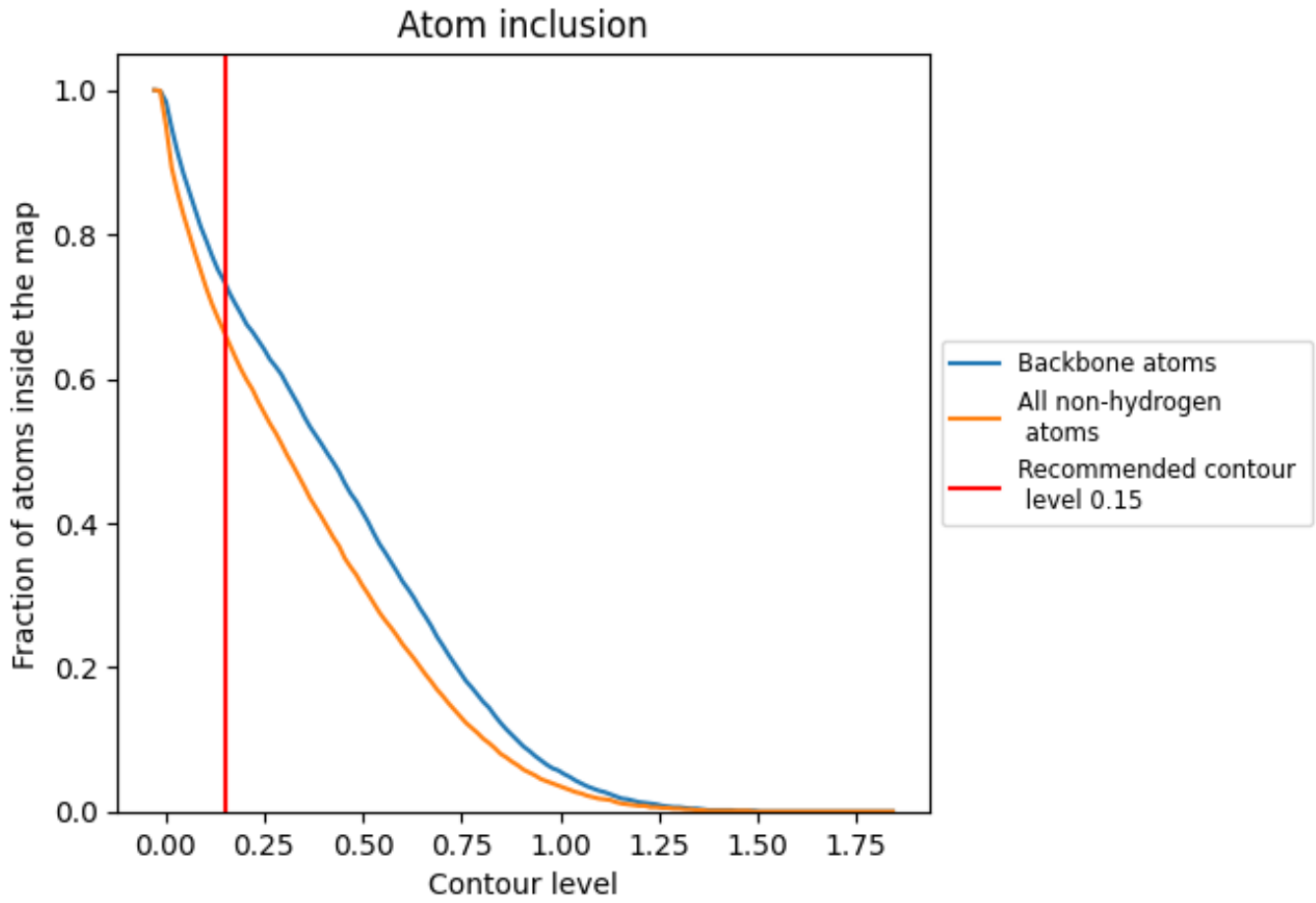
9.3 Atom inclusion mapped to coordinate model (i)



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 (i)



At the recommended contour level, 73% of all backbone atoms, 66% 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 (0.15) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.6630	0.4470
A	0.7000	0.4730
B	0.7090	0.4820
C	0.7150	0.4780
D	0.5600	0.3770
E	0.5820	0.3850
H	0.5650	0.3770
L	0.5650	0.3870