wwPDB EM Validation Summary Report

Apr 6, 2025 – 12:41 AM JST

PDB ID	:	9IP4 / pdb_00009ip4
EMDB ID	:	EMD-60757
Title	:	Cryo-EM structure of the RNA-dependent RNA polymerase complex from Marburg virus
Authors	:	Li, G.; Du, T.; Wang, J.; Wu, S.; Ru, H.
Deposited on	:	2024-07-10
Resolution	:	2.84 Å(reported)

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

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

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

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

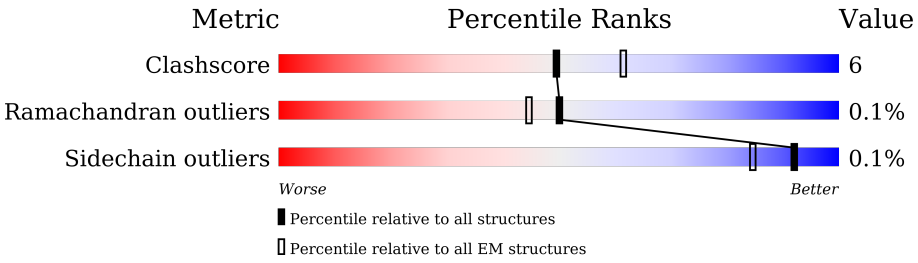
EMDB validation analysis	:	0.0.1.dev117
MolProbity	:	4.02b-467
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.42

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 2.84 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	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	1851	63% 11% 26%
2	B	671	30% 68%
2	C	671	9% 91%
2	D	671	95%
2	E	671	96%

2 Entry composition (i)

There are 3 unique types of molecules in this entry. The entry contains 13615 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 RNA-directed RNA polymerase L,Maltose/maltodextrin-binding periplasmic protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	1364	Total	C	N	O	S	0	0
			11049	7110	1874	2013	52		

There are 64 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	489	ALA	LEU	conflict	UNP P31352
A	979	GLY	ARG	conflict	UNP P31352
A	1426	SER	-	linker	UNP P31352
A	1427	ARG	-	linker	UNP P31352
A	1428	GLU	-	linker	UNP P31352
A	1429	ASN	-	linker	UNP P31352
A	1430	LEU	-	linker	UNP P31352
A	1431	TYR	-	linker	UNP P31352
A	1432	PHE	-	linker	UNP P31352
A	1433	GLN	-	linker	UNP P31352
A	1434	GLY	-	linker	UNP P31352
A	1435	SER	-	linker	UNP P31352
A	1436	GLY	-	linker	UNP P31352
A	1437	TRP	-	linker	UNP P31352
A	1438	SER	-	linker	UNP P31352
A	1439	HIS	-	linker	UNP P31352
A	1440	PRO	-	linker	UNP P31352
A	1441	GLN	-	linker	UNP P31352
A	1442	PHE	-	linker	UNP P31352
A	1443	GLU	-	linker	UNP P31352
A	1444	LYS	-	linker	UNP P31352
A	1445	GLY	-	linker	UNP P31352
A	1446	GLY	-	linker	UNP P31352
A	1447	GLY	-	linker	UNP P31352
A	1448	SER	-	linker	UNP P31352
A	1449	GLY	-	linker	UNP P31352
A	1450	GLY	-	linker	UNP P31352

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Chain	Residue	Modelled	Actual	Comment	Reference
A	1451	GLY	-	linker	UNP P31352
A	1452	SER	-	linker	UNP P31352
A	1453	GLY	-	linker	UNP P31352
A	1454	GLY	-	linker	UNP P31352
A	1455	SER	-	linker	UNP P31352
A	1456	ALA	-	linker	UNP P31352
A	1457	TRP	-	linker	UNP P31352
A	1458	SER	-	linker	UNP P31352
A	1459	HIS	-	linker	UNP P31352
A	1460	PRO	-	linker	UNP P31352
A	1461	GLN	-	linker	UNP P31352
A	1462	PHE	-	linker	UNP P31352
A	1463	GLU	-	linker	UNP P31352
A	1464	LYS	-	linker	UNP P31352
A	1465	GLY	-	linker	UNP P31352
A	1466	SER	-	linker	UNP P31352
A	1467	ALA	-	linker	UNP P31352
A	1468	SER	-	linker	UNP P31352
A	1469	HIS	-	linker	UNP P31352
A	1470	HIS	-	linker	UNP P31352
A	1471	HIS	-	linker	UNP P31352
A	1472	HIS	-	linker	UNP P31352
A	1473	HIS	-	linker	UNP P31352
A	1474	HIS	-	linker	UNP P31352
A	1475	GLY	-	linker	UNP P31352
A	1476	THR	-	linker	UNP P31352
A	1477	LYS	-	linker	UNP P31352
A	1478	THR	-	linker	UNP P31352
A	1843	GLY	-	expression tag	UNP P0AEX9
A	1844	ASP	-	expression tag	UNP P0AEX9
A	1845	TYR	-	expression tag	UNP P0AEX9
A	1846	LYS	-	expression tag	UNP P0AEX9
A	1847	ASP	-	expression tag	UNP P0AEX9
A	1848	ASP	-	expression tag	UNP P0AEX9
A	1849	ASP	-	expression tag	UNP P0AEX9
A	1850	ASP	-	expression tag	UNP P0AEX9
A	1851	LYS	-	expression tag	UNP P0AEX9

- Molecule 2 is a protein called Maltose/maltodextrin-binding periplasmic protein,Polymerase cofactor VP35.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	B	217	Total	C	N	O	S	0	0
			1649	1048	285	308	8		
2	C	63	Total	C	N	O	S	0	0
			471	301	80	87	3		
2	D	32	Total	C	N	O	S	0	0
			244	156	40	45	3		
2	E	26	Total	C	N	O	S	0	0
			201	128	34	36	3		

There are 140 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	-341	MET	-	initiating methionine	UNP P0AEX9
B	-340	GLY	-	expression tag	UNP P0AEX9
B	-339	SER	-	expression tag	UNP P0AEX9
B	-338	SER	-	expression tag	UNP P0AEX9
B	-337	HIS	-	expression tag	UNP P0AEX9
B	-336	HIS	-	expression tag	UNP P0AEX9
B	-335	HIS	-	expression tag	UNP P0AEX9
B	-334	HIS	-	expression tag	UNP P0AEX9
B	-333	HIS	-	expression tag	UNP P0AEX9
B	-332	HIS	-	expression tag	UNP P0AEX9
B	-331	GLY	-	expression tag	UNP P0AEX9
B	-330	THR	-	expression tag	UNP P0AEX9
B	-329	LYS	-	expression tag	UNP P0AEX9
B	-328	THR	-	expression tag	UNP P0AEX9
B	37	GLY	-	linker	UNP P0AEX9
B	38	THR	-	linker	UNP P0AEX9
B	39	ASP	-	linker	UNP P0AEX9
B	40	TYR	-	linker	UNP P0AEX9
B	41	ASP	-	linker	UNP P0AEX9
B	42	ILE	-	linker	UNP P0AEX9
B	43	PRO	-	linker	UNP P0AEX9
B	44	THR	-	linker	UNP P0AEX9
B	45	THR	-	linker	UNP P0AEX9
B	46	LEU	-	linker	UNP P0AEX9
B	47	GLU	-	linker	UNP P0AEX9
B	48	VAL	-	linker	UNP P0AEX9
B	49	LEU	-	linker	UNP P0AEX9
B	50	PHE	-	linker	UNP P0AEX9
B	51	GLN	-	linker	UNP P0AEX9
B	52	GLY	-	linker	UNP P0AEX9
B	53	PRO	-	linker	UNP P0AEX9

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Chain	Residue	Modelled	Actual	Comment	Reference
B	54	LEU	-	linker	UNP P0AEX9
B	55	GLY	-	linker	UNP P0AEX9
B	56	SER	-	linker	UNP P0AEX9
B	296	CYS	SER	conflict	UNP P35259
C	-341	MET	-	initiating methionine	UNP P0AEX9
C	-340	GLY	-	expression tag	UNP P0AEX9
C	-339	SER	-	expression tag	UNP P0AEX9
C	-338	SER	-	expression tag	UNP P0AEX9
C	-337	HIS	-	expression tag	UNP P0AEX9
C	-336	HIS	-	expression tag	UNP P0AEX9
C	-335	HIS	-	expression tag	UNP P0AEX9
C	-334	HIS	-	expression tag	UNP P0AEX9
C	-333	HIS	-	expression tag	UNP P0AEX9
C	-332	HIS	-	expression tag	UNP P0AEX9
C	-331	GLY	-	expression tag	UNP P0AEX9
C	-330	THR	-	expression tag	UNP P0AEX9
C	-329	LYS	-	expression tag	UNP P0AEX9
C	-328	THR	-	expression tag	UNP P0AEX9
C	37	GLY	-	linker	UNP P0AEX9
C	38	THR	-	linker	UNP P0AEX9
C	39	ASP	-	linker	UNP P0AEX9
C	40	TYR	-	linker	UNP P0AEX9
C	41	ASP	-	linker	UNP P0AEX9
C	42	ILE	-	linker	UNP P0AEX9
C	43	PRO	-	linker	UNP P0AEX9
C	44	THR	-	linker	UNP P0AEX9
C	45	THR	-	linker	UNP P0AEX9
C	46	LEU	-	linker	UNP P0AEX9
C	47	GLU	-	linker	UNP P0AEX9
C	48	VAL	-	linker	UNP P0AEX9
C	49	LEU	-	linker	UNP P0AEX9
C	50	PHE	-	linker	UNP P0AEX9
C	51	GLN	-	linker	UNP P0AEX9
C	52	GLY	-	linker	UNP P0AEX9
C	53	PRO	-	linker	UNP P0AEX9
C	54	LEU	-	linker	UNP P0AEX9
C	55	GLY	-	linker	UNP P0AEX9
C	56	SER	-	linker	UNP P0AEX9
C	296	CYS	SER	conflict	UNP P35259
D	-341	MET	-	initiating methionine	UNP P0AEX9
D	-340	GLY	-	expression tag	UNP P0AEX9
D	-339	SER	-	expression tag	UNP P0AEX9

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Chain	Residue	Modelled	Actual	Comment	Reference
D	-338	SER	-	expression tag	UNP P0AEX9
D	-337	HIS	-	expression tag	UNP P0AEX9
D	-336	HIS	-	expression tag	UNP P0AEX9
D	-335	HIS	-	expression tag	UNP P0AEX9
D	-334	HIS	-	expression tag	UNP P0AEX9
D	-333	HIS	-	expression tag	UNP P0AEX9
D	-332	HIS	-	expression tag	UNP P0AEX9
D	-331	GLY	-	expression tag	UNP P0AEX9
D	-330	THR	-	expression tag	UNP P0AEX9
D	-329	LYS	-	expression tag	UNP P0AEX9
D	-328	THR	-	expression tag	UNP P0AEX9
D	37	GLY	-	linker	UNP P0AEX9
D	38	THR	-	linker	UNP P0AEX9
D	39	ASP	-	linker	UNP P0AEX9
D	40	TYR	-	linker	UNP P0AEX9
D	41	ASP	-	linker	UNP P0AEX9
D	42	ILE	-	linker	UNP P0AEX9
D	43	PRO	-	linker	UNP P0AEX9
D	44	THR	-	linker	UNP P0AEX9
D	45	THR	-	linker	UNP P0AEX9
D	46	LEU	-	linker	UNP P0AEX9
D	47	GLU	-	linker	UNP P0AEX9
D	48	VAL	-	linker	UNP P0AEX9
D	49	LEU	-	linker	UNP P0AEX9
D	50	PHE	-	linker	UNP P0AEX9
D	51	GLN	-	linker	UNP P0AEX9
D	52	GLY	-	linker	UNP P0AEX9
D	53	PRO	-	linker	UNP P0AEX9
D	54	LEU	-	linker	UNP P0AEX9
D	55	GLY	-	linker	UNP P0AEX9
D	56	SER	-	linker	UNP P0AEX9
D	296	CYS	SER	conflict	UNP P35259
E	-341	MET	-	initiating methionine	UNP P0AEX9
E	-340	GLY	-	expression tag	UNP P0AEX9
E	-339	SER	-	expression tag	UNP P0AEX9
E	-338	SER	-	expression tag	UNP P0AEX9
E	-337	HIS	-	expression tag	UNP P0AEX9
E	-336	HIS	-	expression tag	UNP P0AEX9
E	-335	HIS	-	expression tag	UNP P0AEX9
E	-334	HIS	-	expression tag	UNP P0AEX9
E	-333	HIS	-	expression tag	UNP P0AEX9
E	-332	HIS	-	expression tag	UNP P0AEX9

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Chain	Residue	Modelled	Actual	Comment	Reference
E	-331	GLY	-	expression tag	UNP P0AEX9
E	-330	THR	-	expression tag	UNP P0AEX9
E	-329	LYS	-	expression tag	UNP P0AEX9
E	-328	THR	-	expression tag	UNP P0AEX9
E	37	GLY	-	linker	UNP P0AEX9
E	38	THR	-	linker	UNP P0AEX9
E	39	ASP	-	linker	UNP P0AEX9
E	40	TYR	-	linker	UNP P0AEX9
E	41	ASP	-	linker	UNP P0AEX9
E	42	ILE	-	linker	UNP P0AEX9
E	43	PRO	-	linker	UNP P0AEX9
E	44	THR	-	linker	UNP P0AEX9
E	45	THR	-	linker	UNP P0AEX9
E	46	LEU	-	linker	UNP P0AEX9
E	47	GLU	-	linker	UNP P0AEX9
E	48	VAL	-	linker	UNP P0AEX9
E	49	LEU	-	linker	UNP P0AEX9
E	50	PHE	-	linker	UNP P0AEX9
E	51	GLN	-	linker	UNP P0AEX9
E	52	GLY	-	linker	UNP P0AEX9
E	53	PRO	-	linker	UNP P0AEX9
E	54	LEU	-	linker	UNP P0AEX9
E	55	GLY	-	linker	UNP P0AEX9
E	56	SER	-	linker	UNP P0AEX9
E	296	CYS	SER	conflict	UNP P35259

- Molecule 3 is ZINC ION (CCD ID: ZN) (formula: Zn) (labeled as "Ligand of Interest" by depositor).

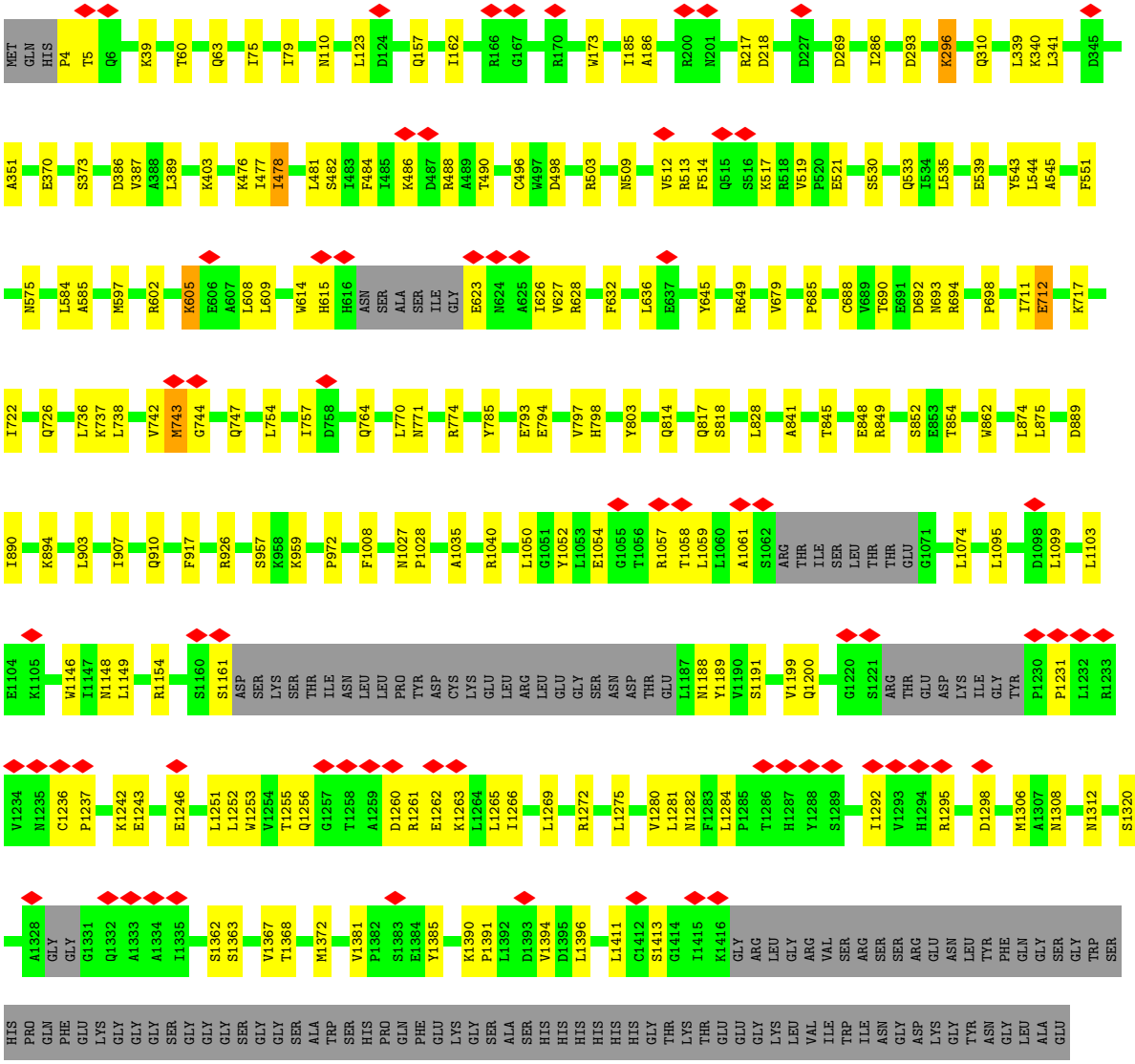
Mol	Chain	Residues	Atoms		AltConf
			Total	Zn	
3	A	1	1	1	0

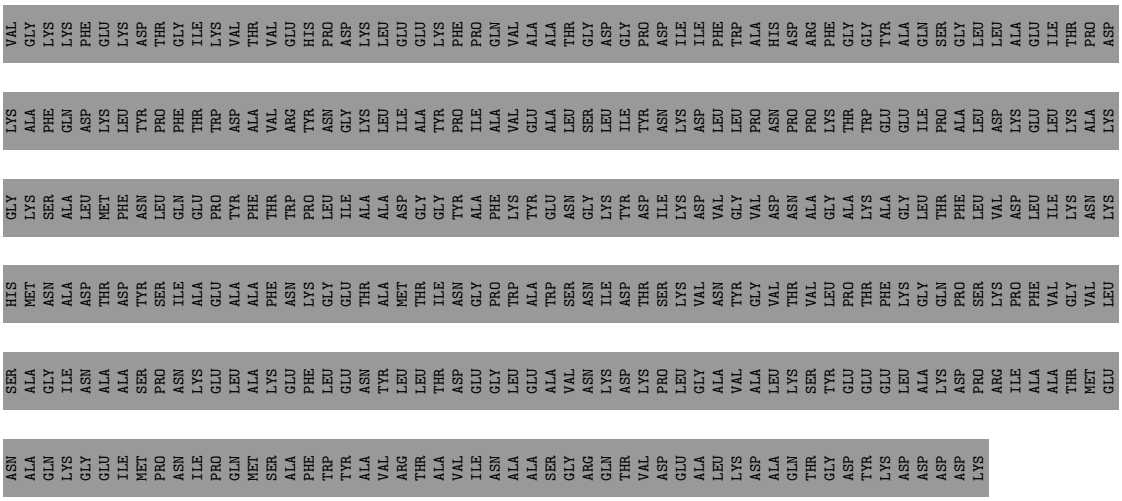
3 Residue-property plots (i)

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: RNA-directed RNA polymerase L,Maltose/maltodextrin-binding periplasmic protein

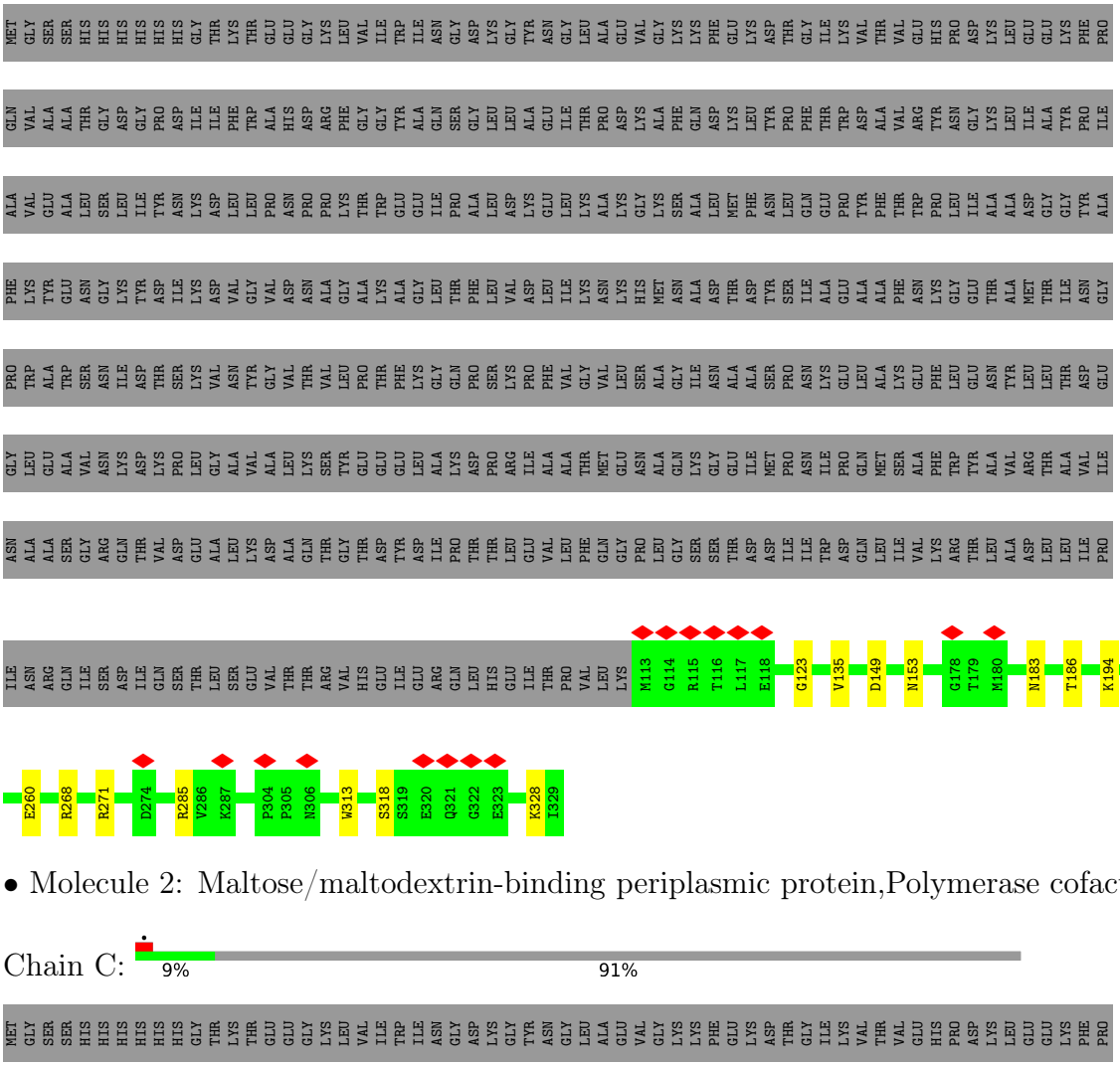
Chain A:





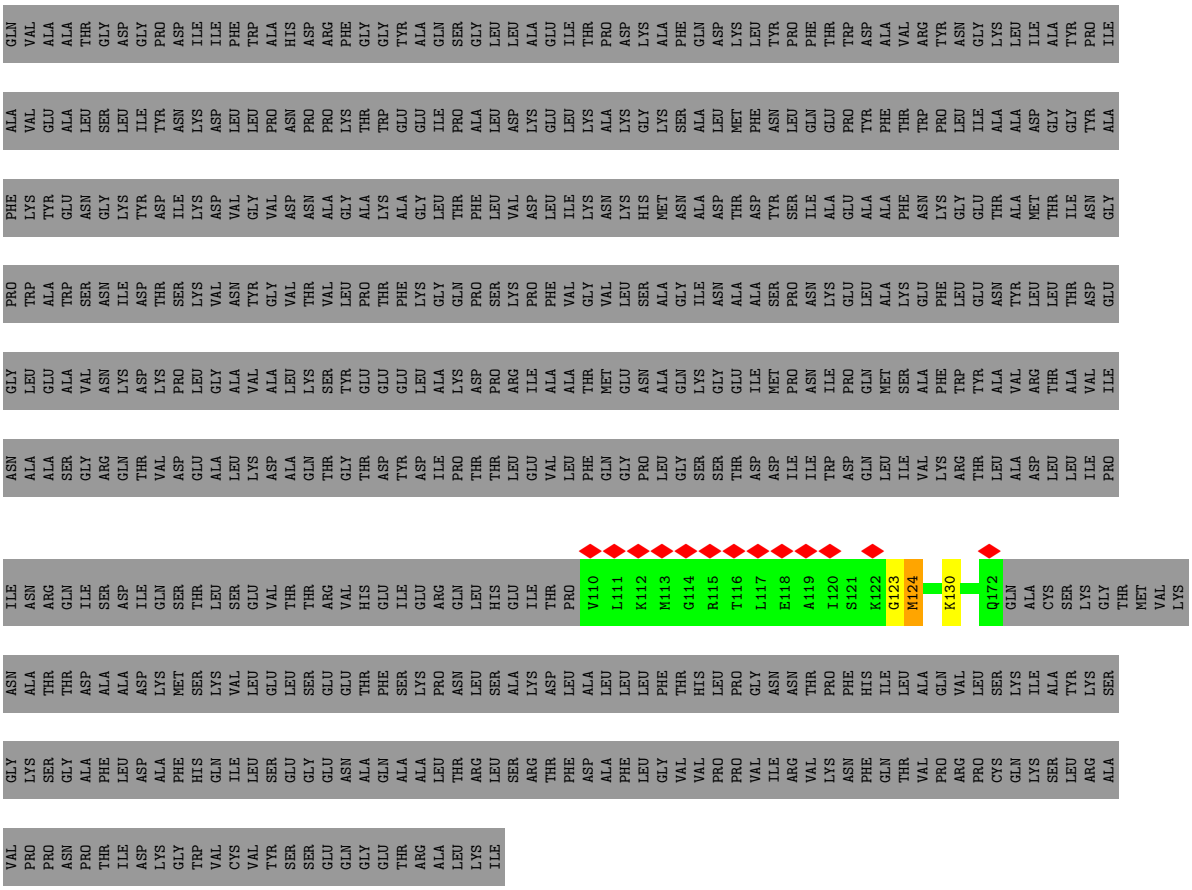
• Molecule 2: Maltose/maltodextrin-binding periplasmic protein,Polymerase cofactor VP35

Chain B:



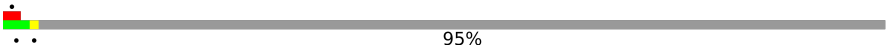
• Molecule 2: Maltose/maltodextrin-binding periplasmic protein,Polymerase cofactor VP35

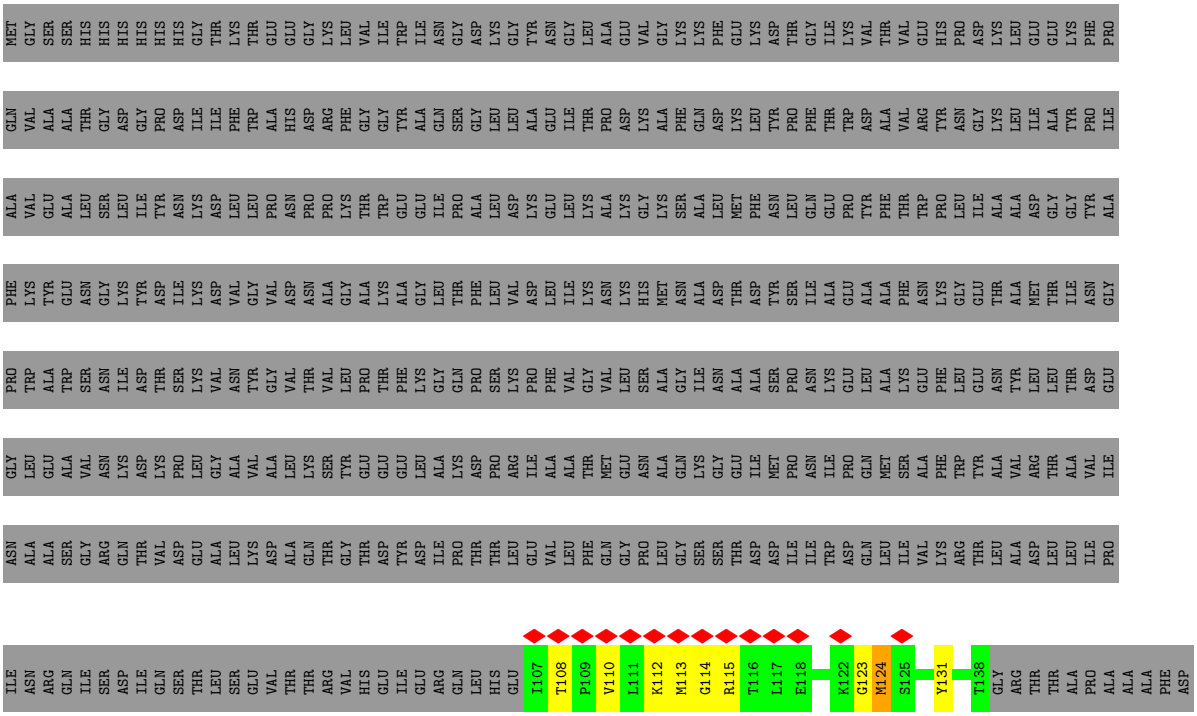
Chain C:

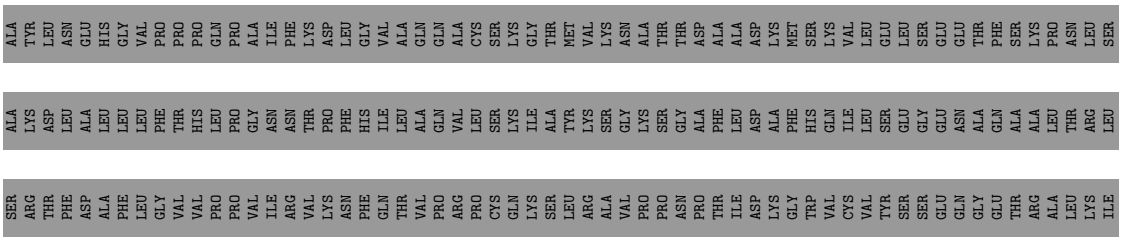


• Molecule 2: Maltose/maltodextrin-binding periplasmic protein,Polymerase cofactor VP35

Chain D:

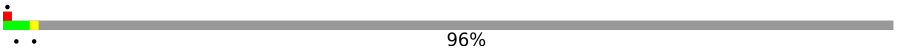


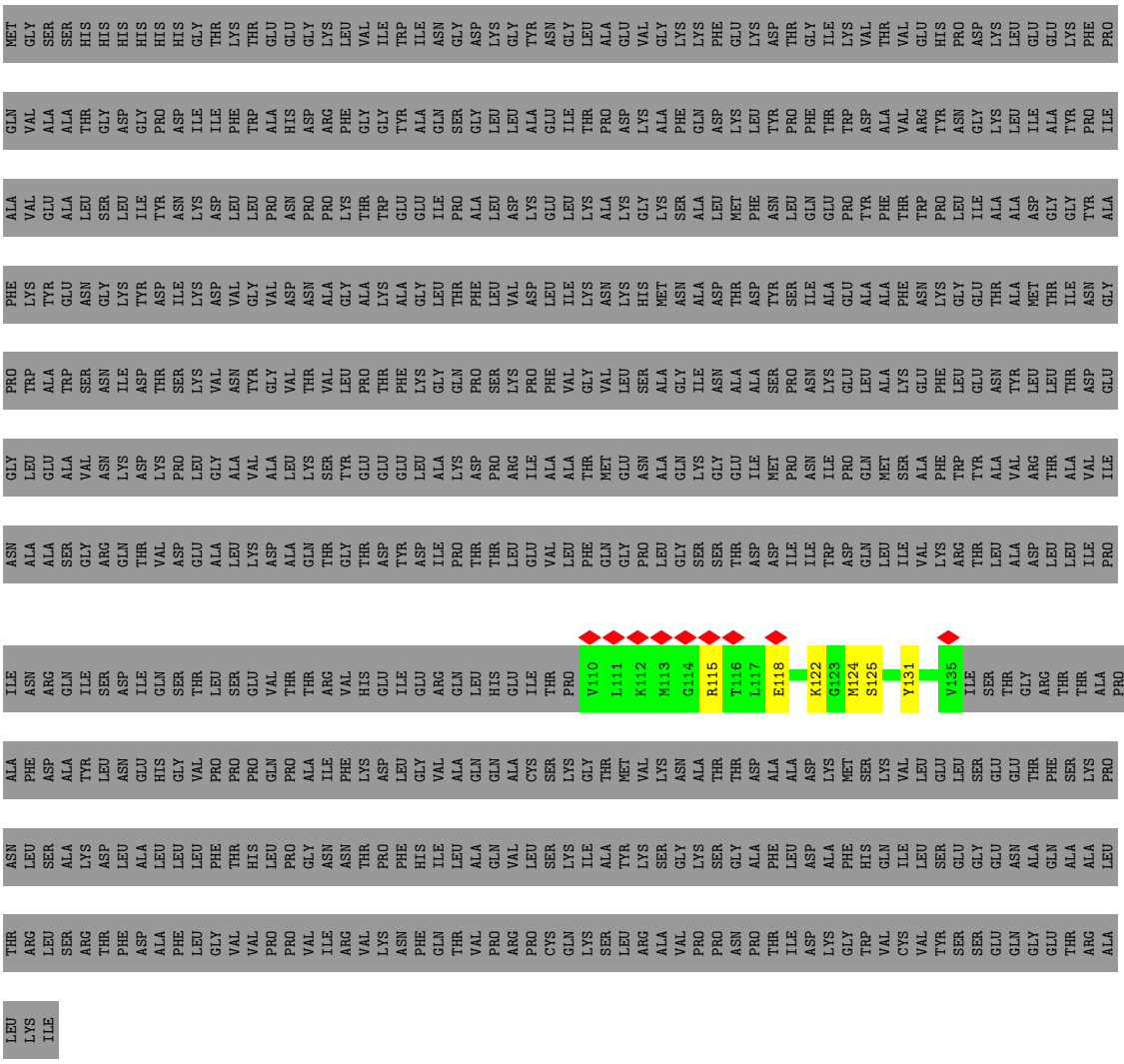




• Molecule 2: Maltose/maltodextrin-binding periplasmic protein,Polymerase cofactor VP35

Chain E:





4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	178297	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	TFS KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	52.52	Depositor
Minimum defocus (nm)	1000	Depositor
Maximum defocus (nm)	1500	Depositor
Magnification	Not provided	
Image detector	GATAN K3 BIOQUANTUM (6k x 4k)	Depositor
Maximum map value	1.487	Depositor
Minimum map value	-0.913	Depositor
Average map value	0.001	Depositor
Map value standard deviation	0.044	Depositor
Recommended contour level	0.135	Depositor
Map size (Å)	217.856, 217.856, 217.856	wwPDB
Map dimensions	256, 256, 256	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.851, 0.851, 0.851	Depositor

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: ZN

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	0.33	0/11326	0.62	9/15360 (0.1%)
2	B	0.34	0/1684	0.54	1/2283 (0.0%)
2	C	0.42	0/481	0.61	1/652 (0.2%)
2	D	0.43	0/246	0.79	1/329 (0.3%)
2	E	0.29	0/202	0.61	0/267
All	All	0.34	0/13939	0.62	12/18891 (0.1%)

There are no bond length outliers.

The worst 5 of 12 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	743	MET	CG-SD-CE	11.11	117.97	100.20
1	A	296	LYS	CD-CE-NZ	-10.38	87.82	111.70
1	A	828	LEU	CB-CG-CD2	-9.10	95.53	111.00
1	A	794	GLU	CA-CB-CG	7.17	129.17	113.40
1	A	605	LYS	CB-CG-CD	-5.90	96.26	111.60

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	11049	0	10953	130	0

Continued on next page...

Continued from previous page...

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	B	1649	0	1679	10	0
2	C	471	0	479	4	0
2	D	244	0	264	8	0
2	E	201	0	216	4	0
3	A	1	0	0	0	0
All	All	13615	0	13591	150	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 6.

The worst 5 of 150 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:1040:ARG:NH1	1:A:1246:GLU:OE1	2.07	0.88
1:A:743:MET:HE3	1:A:803:TYR:HB3	1.58	0.85
1:A:498:ASP:OD2	1:A:694:ARG:HD2	1.82	0.79
1:A:1260:ASP:OD2	1:A:1263:LYS:NZ	2.17	0.77
1:A:743:MET:HG2	1:A:744:GLY:H	1.50	0.76

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	1352/1851 (73%)	1288 (95%)	63 (5%)	1 (0%)	48 69
2	B	215/671 (32%)	212 (99%)	3 (1%)	0	100 100
2	C	61/671 (9%)	60 (98%)	1 (2%)	0	100 100
2	D	30/671 (4%)	30 (100%)	0	0	100 100
2	E	24/671 (4%)	24 (100%)	0	0	100 100
All	All	1682/4535 (37%)	1614 (96%)	67 (4%)	1 (0%)	50 69

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	544	LEU

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	1226/1617 (76%)	1225 (100%)	1 (0%)	92 98
2	B	179/554 (32%)	179 (100%)	0	100 100
2	C	49/554 (9%)	49 (100%)	0	100 100
2	D	28/554 (5%)	28 (100%)	0	100 100
2	E	22/554 (4%)	22 (100%)	0	100 100
All	All	1504/3833 (39%)	1503 (100%)	1 (0%)	92 98

All (1) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	712	GLU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 10 such sidechains are listed below:

Mol	Chain	Res	Type
1	A	1287	HIS
1	A	1312	ASN
1	A	1343	ASN
1	A	444	GLN
1	A	509	ASN

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 oligosaccharides in this entry.

5.6 Ligand geometry (i)

Of 1 ligands modelled in this entry, 1 is monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

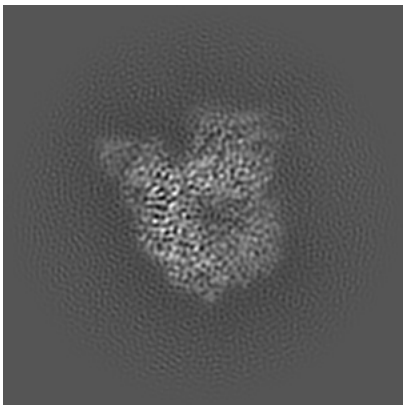
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-60757. These allow visual inspection of the internal detail of the map and identification of artifacts.

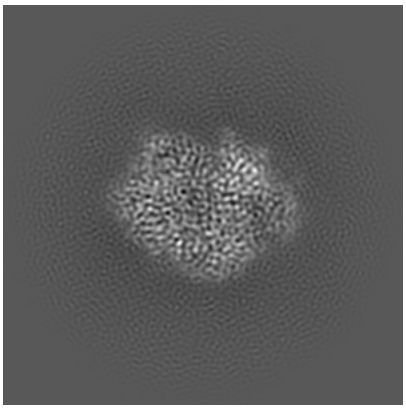
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

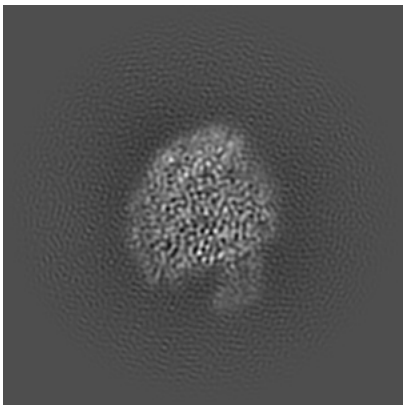
6.1.1 Primary map



X

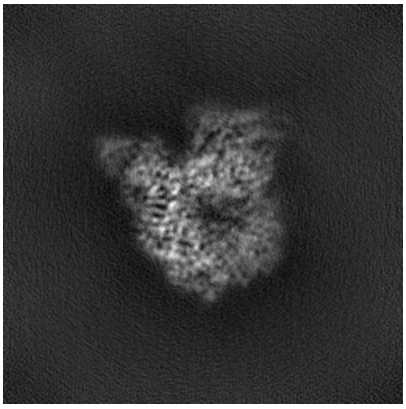


Y

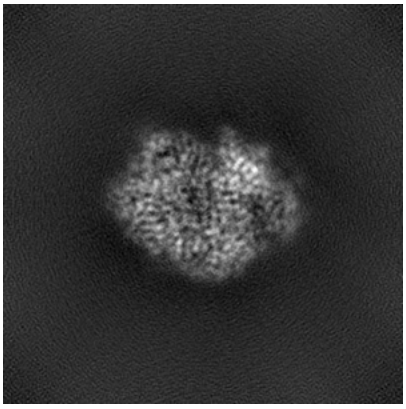


Z

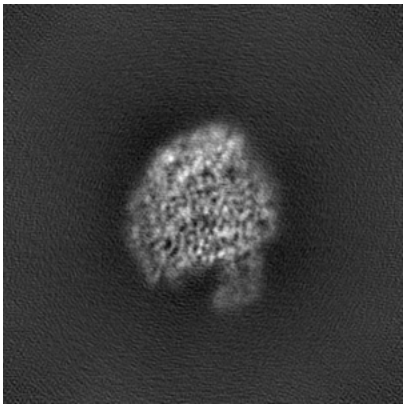
6.1.2 Raw map



X



Y

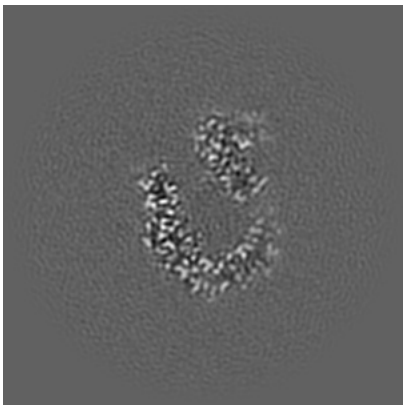


Z

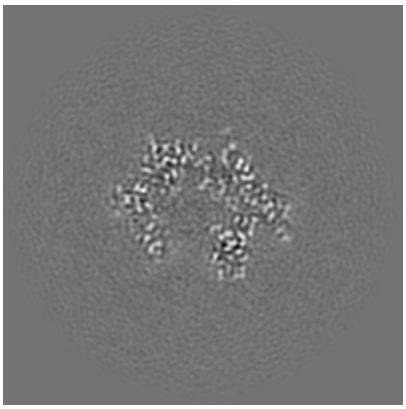
The images above show the map projected in three orthogonal directions.

6.2 Central slices (i)

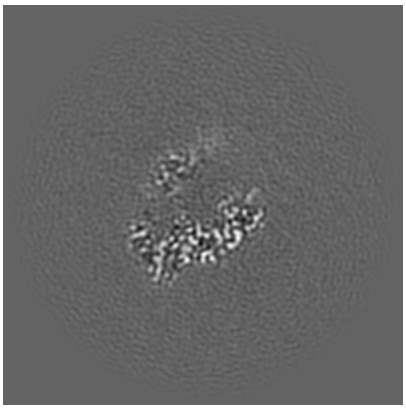
6.2.1 Primary map



X Index: 128

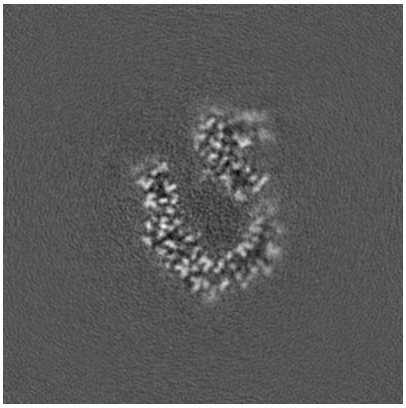


Y Index: 128

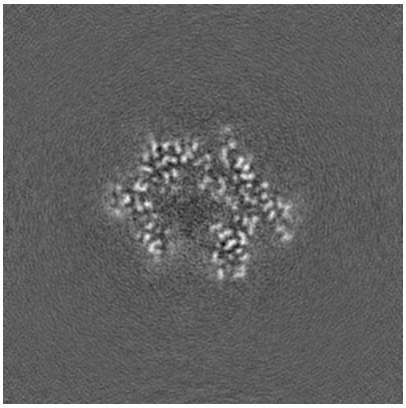


Z Index: 128

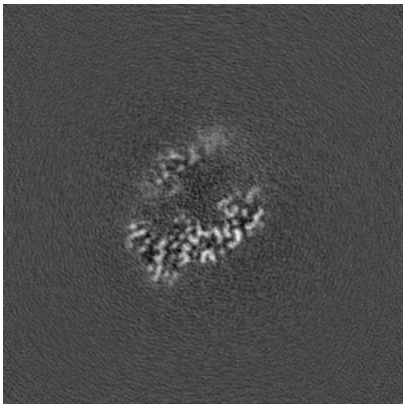
6.2.2 Raw map



X Index: 128



Y Index: 128

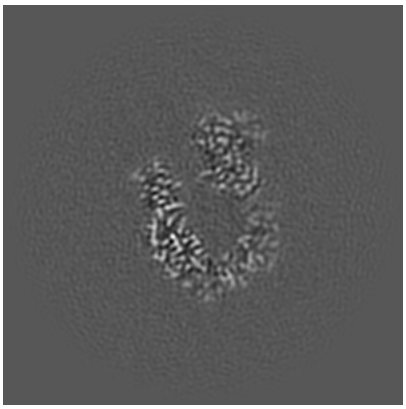


Z Index: 128

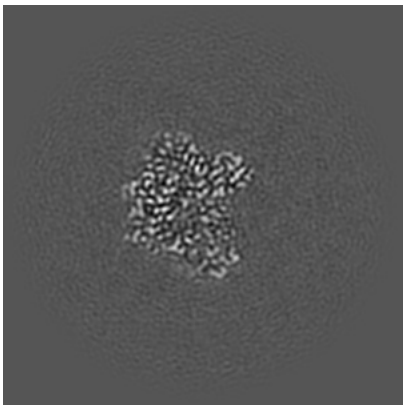
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

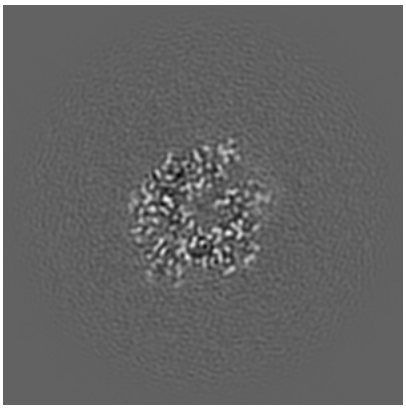
6.3.1 Primary map



X Index: 125

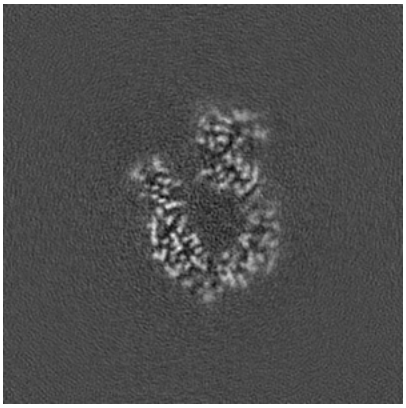


Y Index: 111

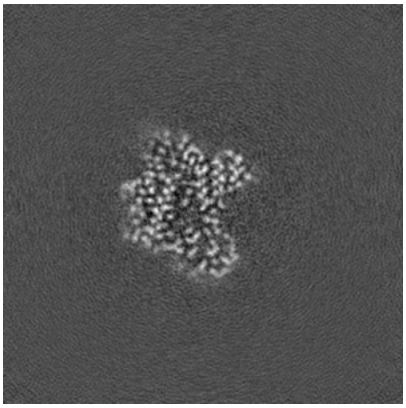


Z Index: 140

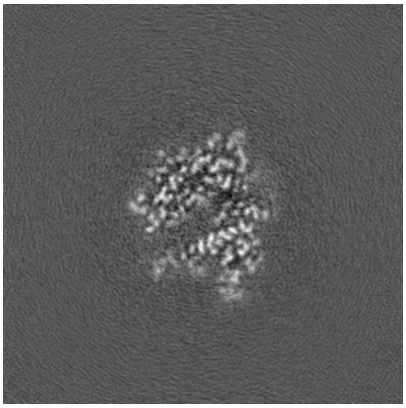
6.3.2 Raw map



X Index: 125



Y Index: 110

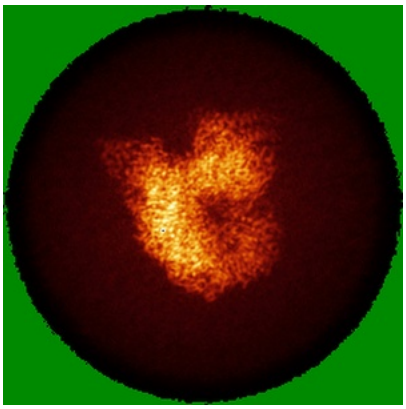


Z Index: 149

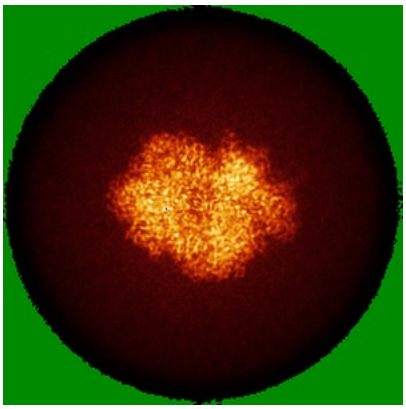
The images above show the largest variance slices of the map in three orthogonal directions.

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

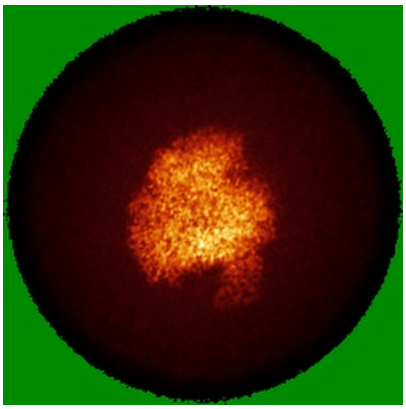
6.4.1 Primary map



X

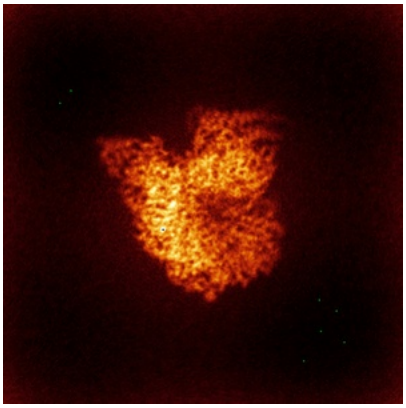


Y

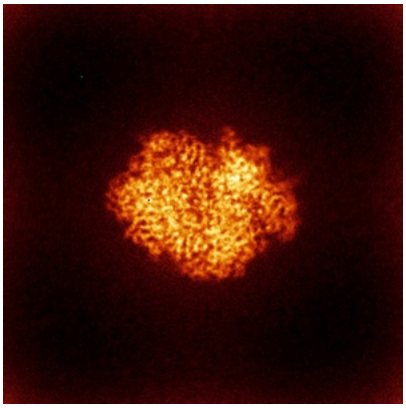


Z

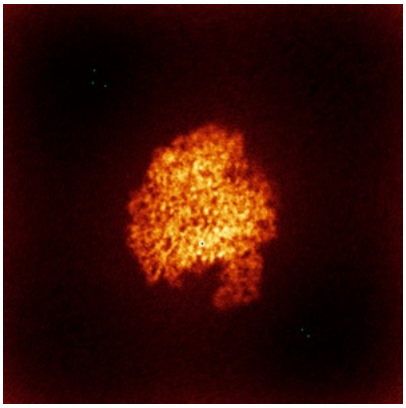
6.4.2 Raw map



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.

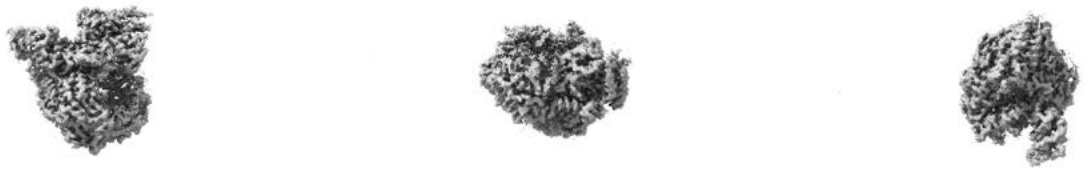
6.5 Orthogonal surface views (i)

6.5.1 Primary map

X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.135. 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.

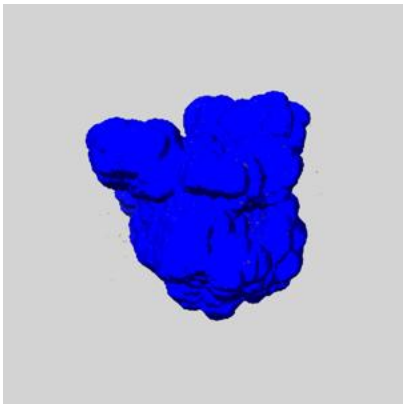
6.6 Mask visualisation

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

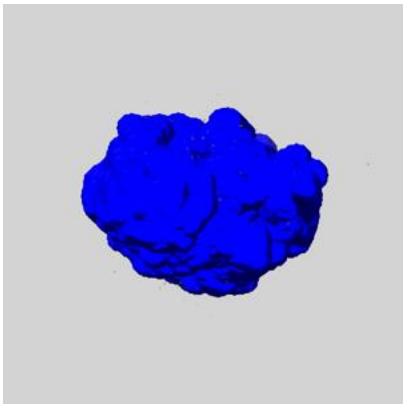
A mask typically either:

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

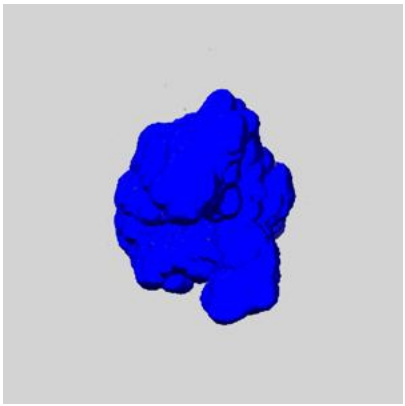
6.6.1 emd_60757_msk_1.map



X



Y

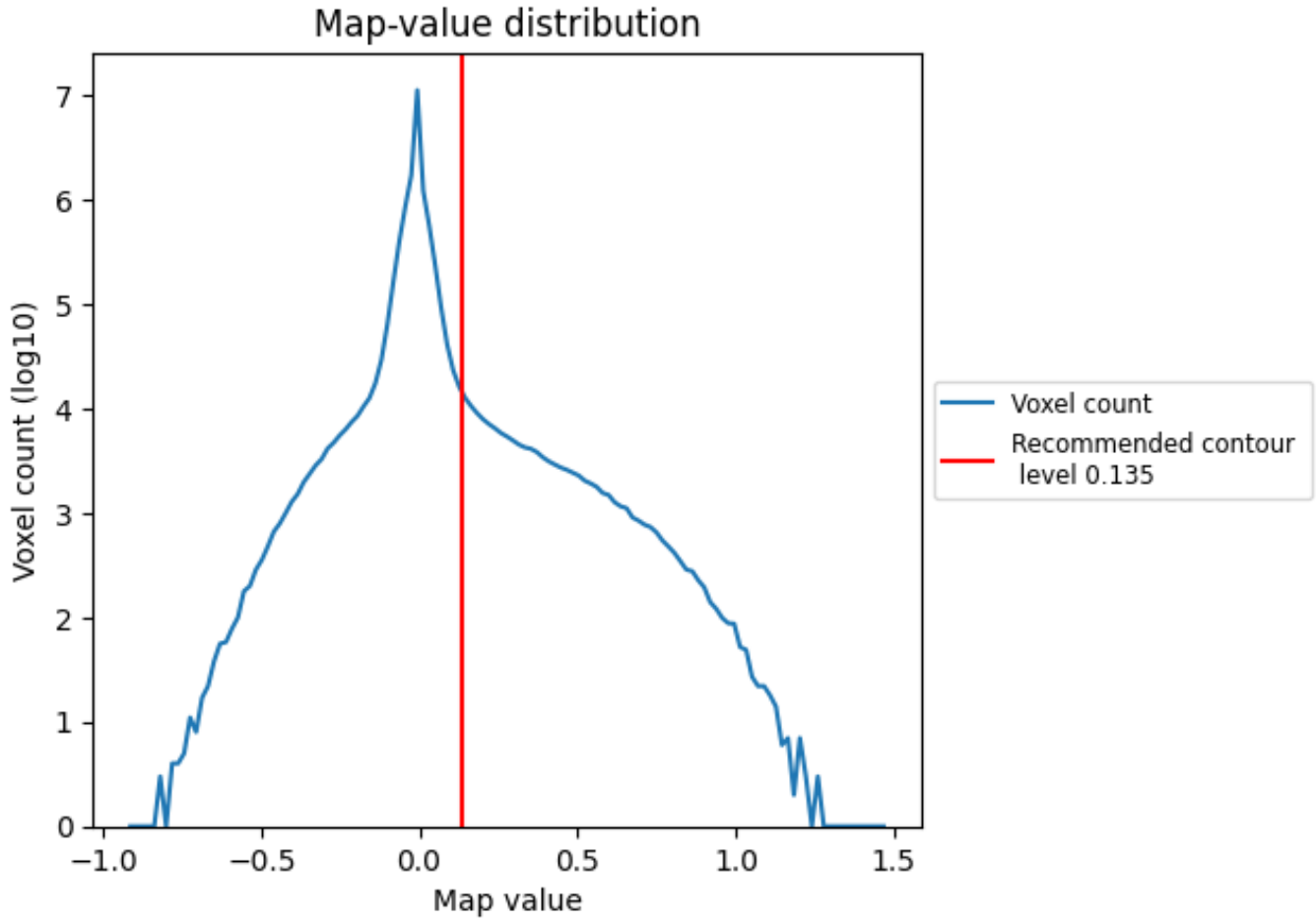


Z

7 Map analysis

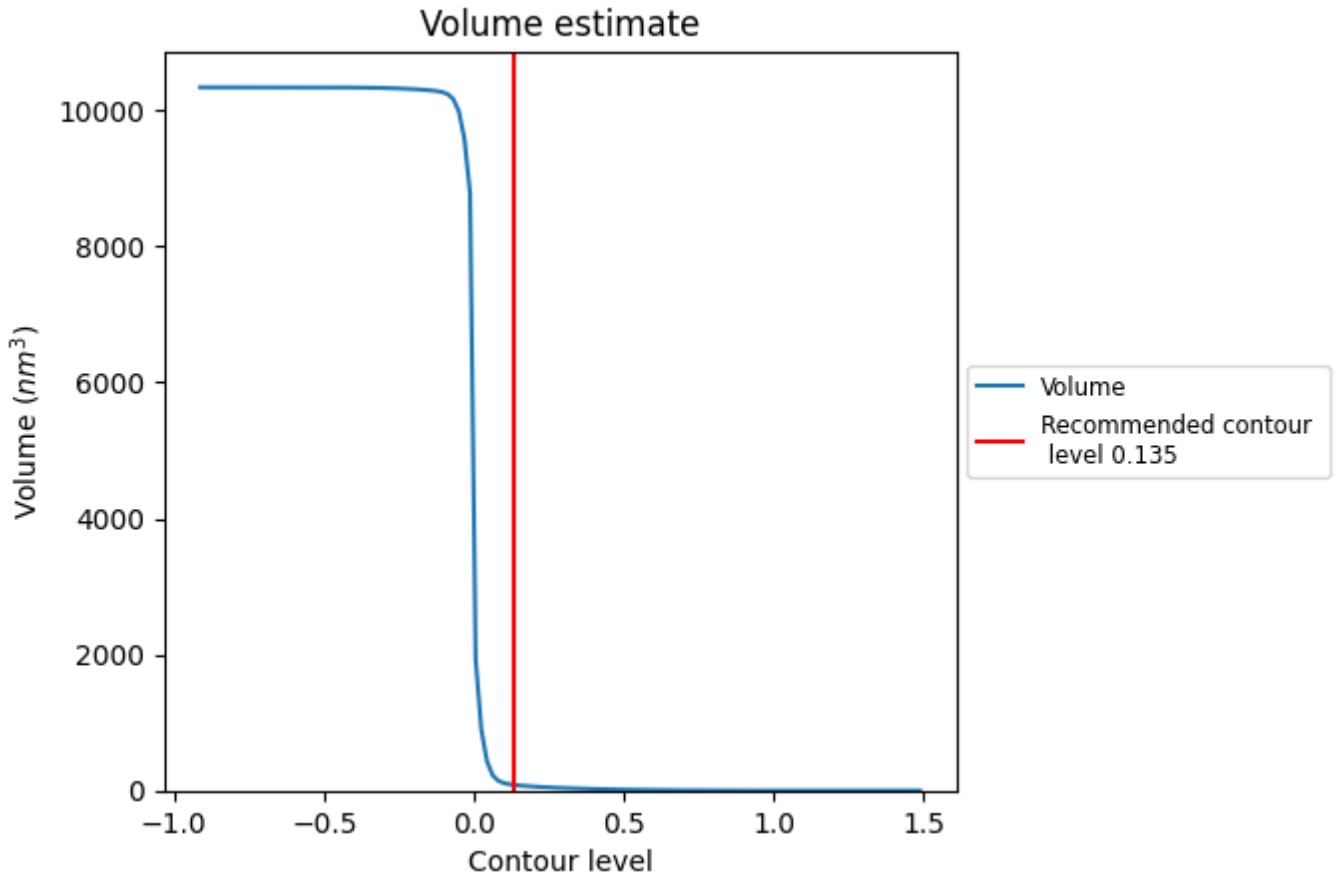
This section contains the results of statistical analysis of the map.

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.

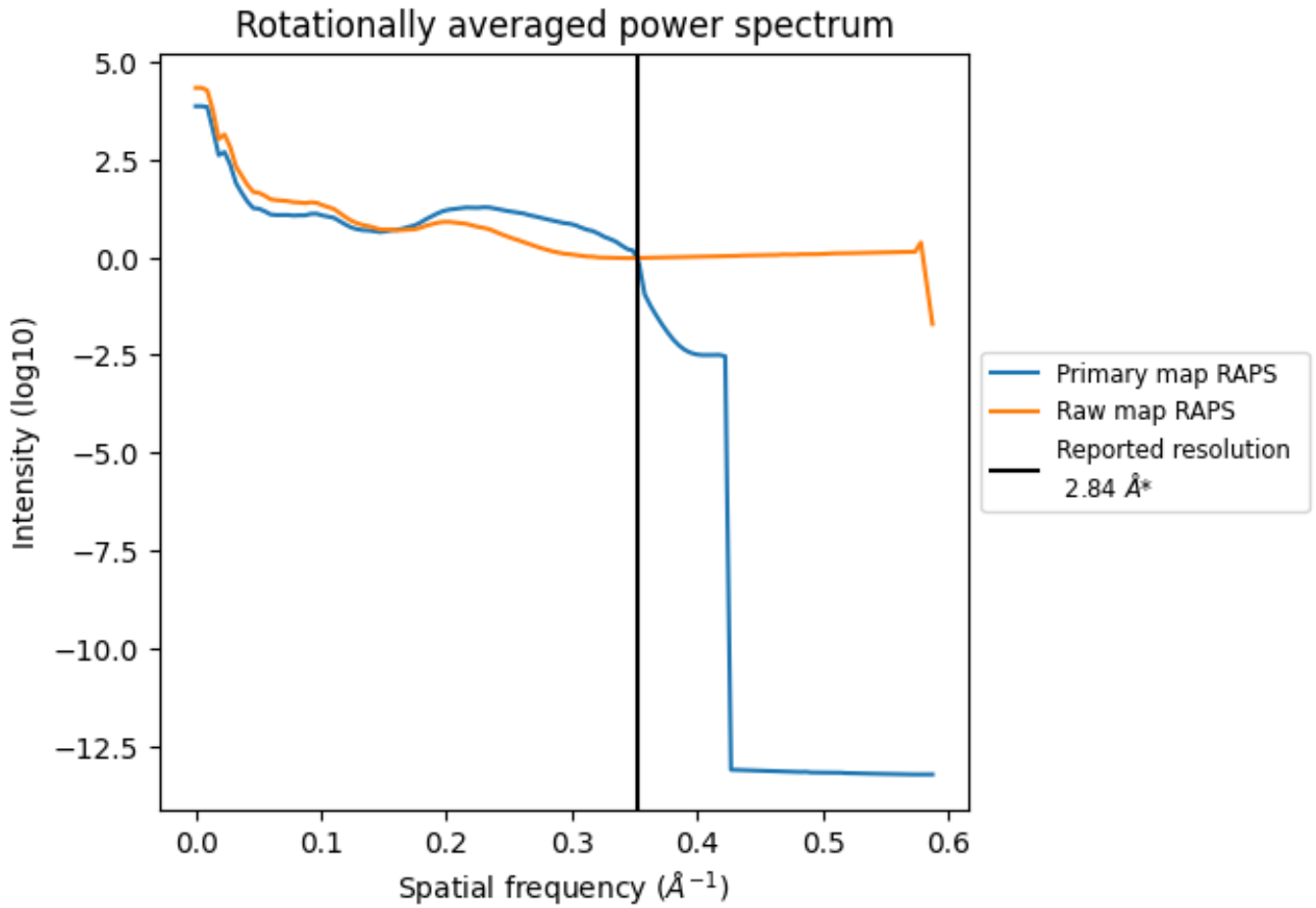
7.2 Volume estimate (i)



The volume at the recommended contour level is 82 nm^3; this corresponds to an approximate mass of 75 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)

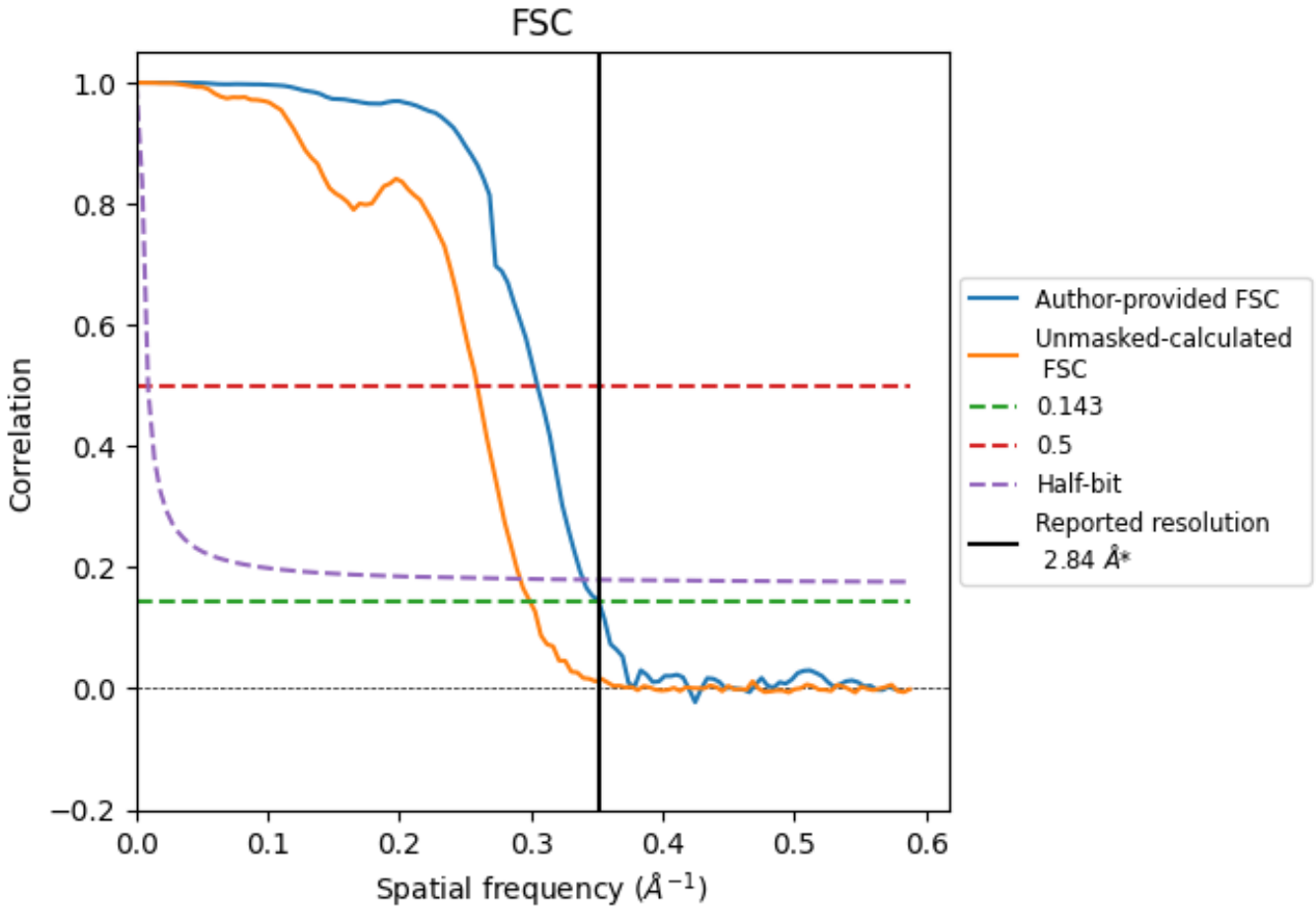


*Reported resolution corresponds to spatial frequency of 0.352 $Å^{-1}$

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 0.352 Å^{-1}

8.2 Resolution estimates (i)

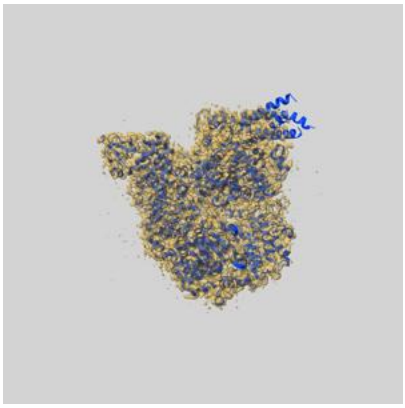
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.84	-	-
Author-provided FSC curve	2.84	3.28	2.94
Unmasked-calculated*	3.34	3.86	3.43

*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 3.34 differs from the reported value 2.84 by more than 10 %

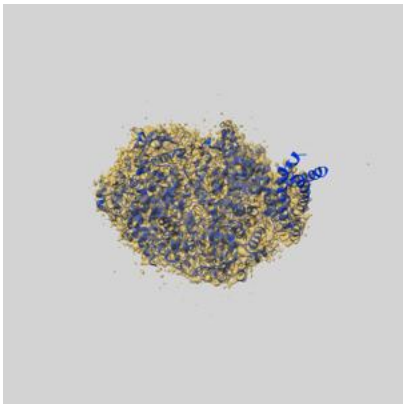
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-60757 and PDB model 9IP4. Per-residue inclusion information can be found in section 3 on page 9.

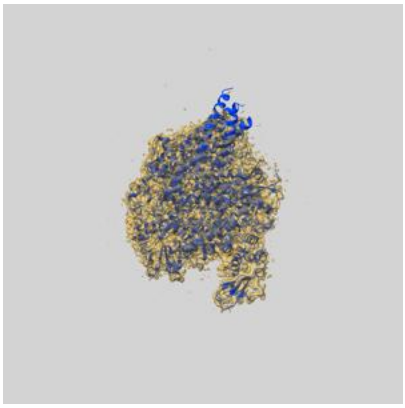
9.1 Map-model overlay



X



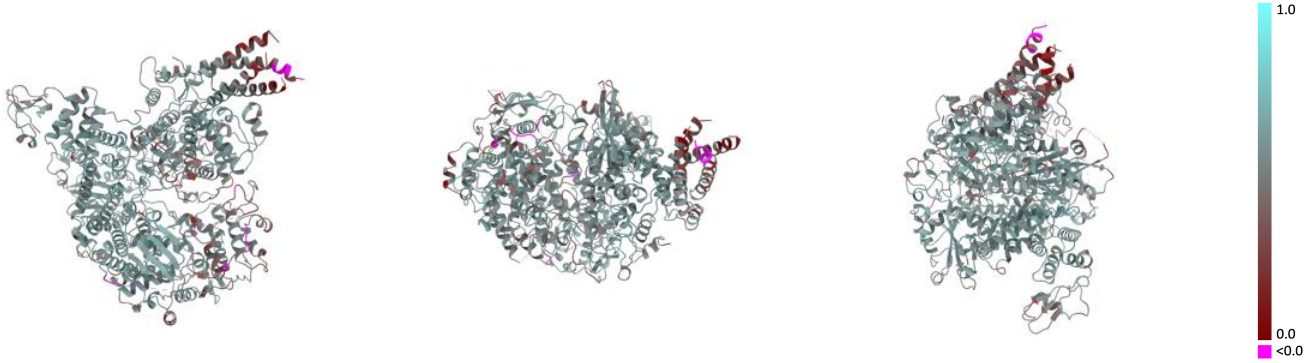
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.135 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.

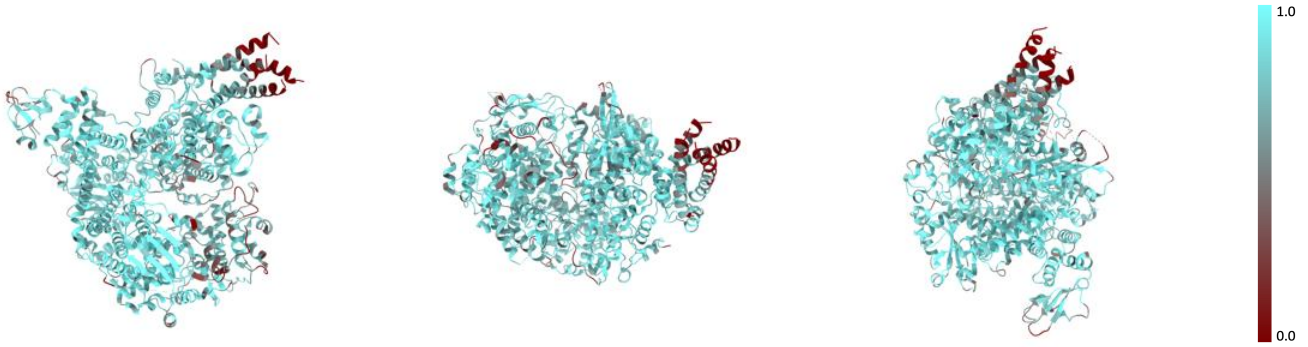
9.2 Q-score mapped to coordinate model (i)



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.

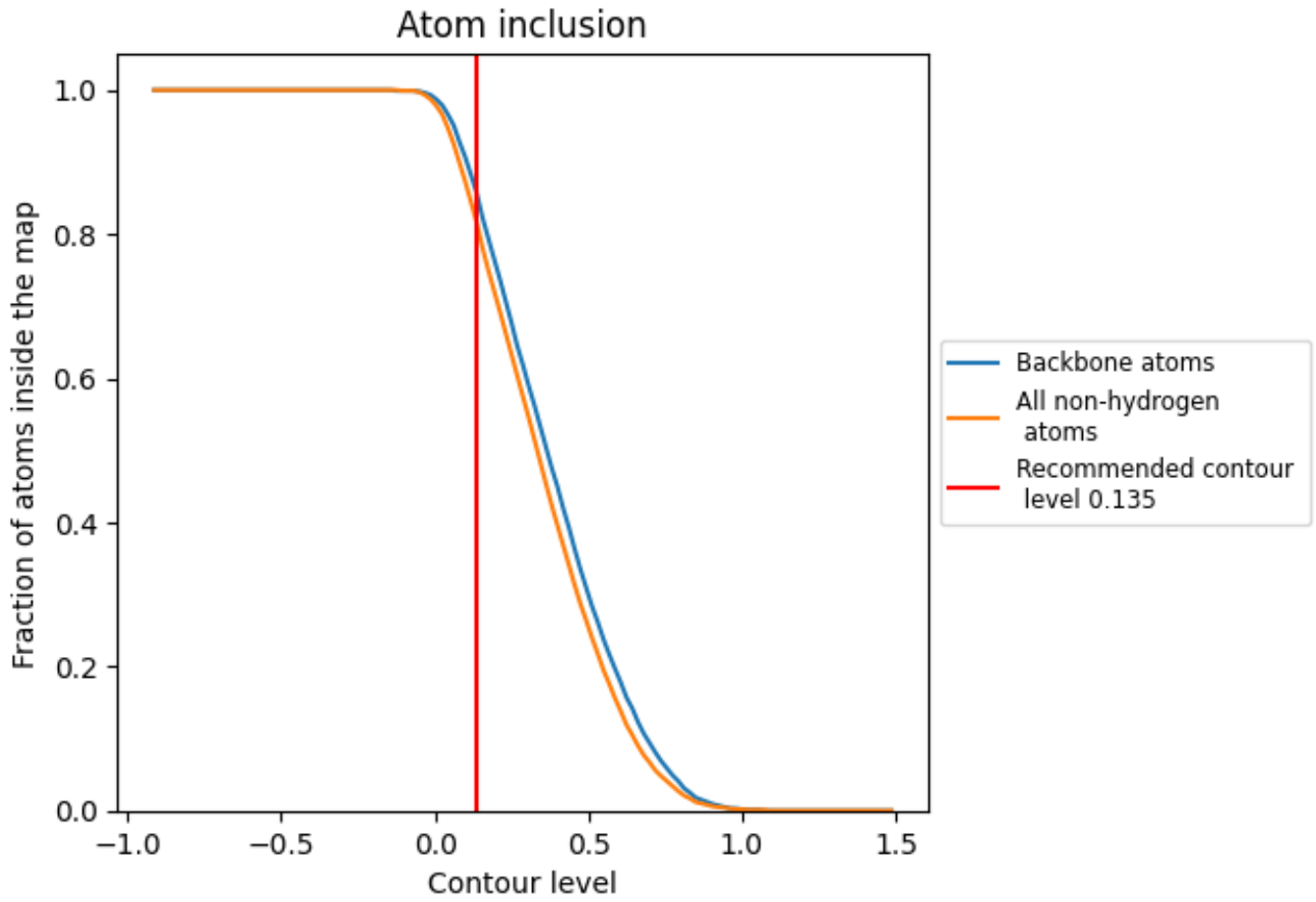
9.3 Atom inclusion mapped to coordinate model (i)



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 (0.135).

9.4 Atom inclusion (i)



At the recommended contour level, 86% of all backbone atoms, 82% 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 (0.135) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.8180	0.5310
A	0.8460	0.5440
B	0.7740	0.5150
C	0.6730	0.4680
D	0.4400	0.3360
E	0.4700	0.3660