



wwPDB EM Validation Summary Report ⓘ

Aug 11, 2025 – 10:13 am BST

PDB ID : 9H1Q / pdb_00009h1q
EMDB ID : EMD-51770
Title : Structure of the borna disease virus 1 replication core complex - reaction complex
Authors : Keown, J.R.; Carrique, L.; Grimes, J.M.
Deposited on : 2024-10-10
Resolution : 2.95 Å(reported)
Based on initial model : .

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

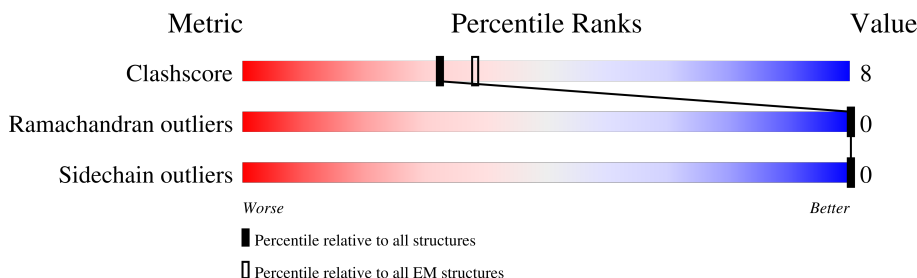
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY






The reported resolution of this entry is 2.95 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 $\leq 5\%$. The upper red bar (where present) indicates the fraction of residues that have poor fit to the EM map (all-atom inclusion $< 40\%$). The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	1756	
2	B	217	
2	C	217	
2	D	217	
2	E	217	

2 Entry composition

There are 3 unique types of molecules in this entry. The entry contains 20850 atoms, of which 10537 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.

Mol	Chain	Residues	Atoms						AltConf	Trace
1	A	1150	Total	C	H	N	O	S	0	0
			18372	5864	9250	1556	1651	51		

There are 45 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-44	MET	-	initiating methionine	UNP P52639
A	-43	TRP	-	expression tag	UNP P52639
A	-42	SER	-	expression tag	UNP P52639
A	-41	HIS	-	expression tag	UNP P52639
A	-40	PRO	-	expression tag	UNP P52639
A	-39	GLN	-	expression tag	UNP P52639
A	-38	PHE	-	expression tag	UNP P52639
A	-37	GLU	-	expression tag	UNP P52639
A	-36	LYS	-	expression tag	UNP P52639
A	-35	GLY	-	expression tag	UNP P52639
A	-34	GLY	-	expression tag	UNP P52639
A	-33	GLY	-	expression tag	UNP P52639
A	-32	SER	-	expression tag	UNP P52639
A	-31	GLY	-	expression tag	UNP P52639
A	-30	GLY	-	expression tag	UNP P52639
A	-29	GLY	-	expression tag	UNP P52639
A	-28	SER	-	expression tag	UNP P52639
A	-27	GLY	-	expression tag	UNP P52639
A	-26	GLY	-	expression tag	UNP P52639
A	-25	SER	-	expression tag	UNP P52639
A	-24	SER	-	expression tag	UNP P52639
A	-23	ALA	-	expression tag	UNP P52639
A	-22	TRP	-	expression tag	UNP P52639
A	-21	SER	-	expression tag	UNP P52639
A	-20	HIS	-	expression tag	UNP P52639
A	-19	PRO	-	expression tag	UNP P52639
A	-18	GLN	-	expression tag	UNP P52639
A	-17	PHE	-	expression tag	UNP P52639

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Chain	Residue	Modelled	Actual	Comment	Reference
A	-16	GLU	-	expression tag	UNP P52639
A	-15	LYS	-	expression tag	UNP P52639
A	-14	HIS	-	expression tag	UNP P52639
A	-13	HIS	-	expression tag	UNP P52639
A	-12	HIS	-	expression tag	UNP P52639
A	-11	HIS	-	expression tag	UNP P52639
A	-10	HIS	-	expression tag	UNP P52639
A	-9	HIS	-	expression tag	UNP P52639
A	-8	HIS	-	expression tag	UNP P52639
A	-7	HIS	-	expression tag	UNP P52639
A	-6	GLU	-	expression tag	UNP P52639
A	-5	ASN	-	expression tag	UNP P52639
A	-4	LEU	-	expression tag	UNP P52639
A	-3	TYR	-	expression tag	UNP P52639
A	-2	PHE	-	expression tag	UNP P52639
A	-1	GLN	-	expression tag	UNP P52639
A	0	GLY	-	expression tag	UNP P52639

- Molecule 2 is a protein called Phosphoprotein.

Mol	Chain	Residues	Atoms						AltConf	Trace
2	B	50	Total	C	H	N	O	S	0	0
			779	240	402	60	70	7		
2	C	34	Total	C	H	N	O	S	0	0
			566	172	295	42	51	6		
2	D	34	Total	C	H	N	O	S	0	0
			566	172	295	42	51	6		
2	E	34	Total	C	H	N	O	S	0	0
			566	172	295	42	51	6		

There are 64 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	-15	MET	-	initiating methionine	UNP P0C799
B	-14	HIS	-	expression tag	UNP P0C799
B	-13	HIS	-	expression tag	UNP P0C799
B	-12	HIS	-	expression tag	UNP P0C799
B	-11	HIS	-	expression tag	UNP P0C799
B	-10	HIS	-	expression tag	UNP P0C799
B	-9	HIS	-	expression tag	UNP P0C799
B	-8	HIS	-	expression tag	UNP P0C799
B	-7	HIS	-	expression tag	UNP P0C799

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Chain	Residue	Modelled	Actual	Comment	Reference
B	-6	GLU	-	expression tag	UNP P0C799
B	-5	ASN	-	expression tag	UNP P0C799
B	-4	LEU	-	expression tag	UNP P0C799
B	-3	TYR	-	expression tag	UNP P0C799
B	-2	PHE	-	expression tag	UNP P0C799
B	-1	GLN	-	expression tag	UNP P0C799
B	0	GLY	-	expression tag	UNP P0C799
C	-15	MET	-	initiating methionine	UNP P0C799
C	-14	HIS	-	expression tag	UNP P0C799
C	-13	HIS	-	expression tag	UNP P0C799
C	-12	HIS	-	expression tag	UNP P0C799
C	-11	HIS	-	expression tag	UNP P0C799
C	-10	HIS	-	expression tag	UNP P0C799
C	-9	HIS	-	expression tag	UNP P0C799
C	-8	HIS	-	expression tag	UNP P0C799
C	-7	HIS	-	expression tag	UNP P0C799
C	-6	GLU	-	expression tag	UNP P0C799
C	-5	ASN	-	expression tag	UNP P0C799
C	-4	LEU	-	expression tag	UNP P0C799
C	-3	TYR	-	expression tag	UNP P0C799
C	-2	PHE	-	expression tag	UNP P0C799
C	-1	GLN	-	expression tag	UNP P0C799
C	0	GLY	-	expression tag	UNP P0C799
D	-15	MET	-	initiating methionine	UNP P0C799
D	-14	HIS	-	expression tag	UNP P0C799
D	-13	HIS	-	expression tag	UNP P0C799
D	-12	HIS	-	expression tag	UNP P0C799
D	-11	HIS	-	expression tag	UNP P0C799
D	-10	HIS	-	expression tag	UNP P0C799
D	-9	HIS	-	expression tag	UNP P0C799
D	-8	HIS	-	expression tag	UNP P0C799
D	-7	HIS	-	expression tag	UNP P0C799
D	-6	GLU	-	expression tag	UNP P0C799
D	-5	ASN	-	expression tag	UNP P0C799
D	-4	LEU	-	expression tag	UNP P0C799
D	-3	TYR	-	expression tag	UNP P0C799
D	-2	PHE	-	expression tag	UNP P0C799
D	-1	GLN	-	expression tag	UNP P0C799
D	0	GLY	-	expression tag	UNP P0C799
E	-15	MET	-	initiating methionine	UNP P0C799
E	-14	HIS	-	expression tag	UNP P0C799
E	-13	HIS	-	expression tag	UNP P0C799

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Chain	Residue	Modelled	Actual	Comment	Reference
E	-12	HIS	-	expression tag	UNP P0C799
E	-11	HIS	-	expression tag	UNP P0C799
E	-10	HIS	-	expression tag	UNP P0C799
E	-9	HIS	-	expression tag	UNP P0C799
E	-8	HIS	-	expression tag	UNP P0C799
E	-7	HIS	-	expression tag	UNP P0C799
E	-6	GLU	-	expression tag	UNP P0C799
E	-5	ASN	-	expression tag	UNP P0C799
E	-4	LEU	-	expression tag	UNP P0C799
E	-3	TYR	-	expression tag	UNP P0C799
E	-2	PHE	-	expression tag	UNP P0C799
E	-1	GLN	-	expression tag	UNP P0C799
E	0	GLY	-	expression tag	UNP P0C799

- Molecule 3 is ZINC ION (CCD ID: ZN) (formula: Zn).

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

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

- Molecule 2: Phosphoprotein

Chain B:  18% 5% 77%

[illegible]

- Molecule 2: Phosphoprotein

Chain C:  13% 1% 84%

[illegible]

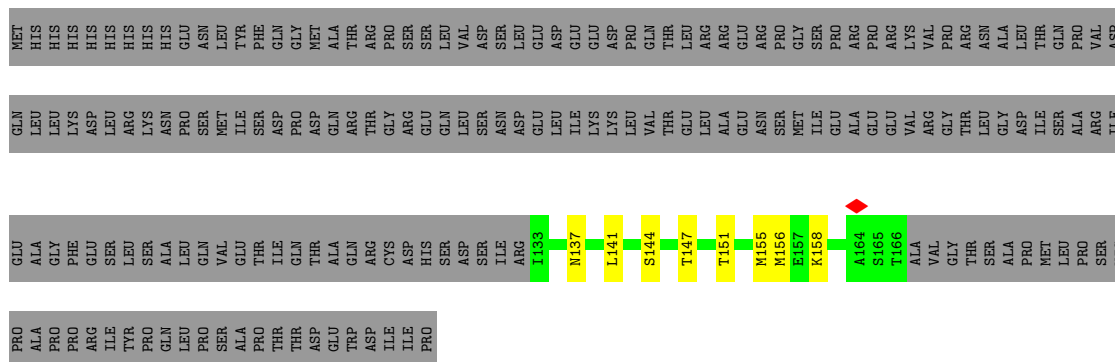
- Molecule 2: Phosphoprotein

Chain D: 10% 6% 84%

[illegible]

- Molecule 2: Phosphoprotein

Chain E: 12% 84%



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	264568	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	TFS KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	50	Depositor
Minimum defocus (nm)	1400	Depositor
Maximum defocus (nm)	2600	Depositor
Magnification	Not provided	
Image detector	FEI FALCON IV (4k x 4k)	Depositor
Maximum map value	0.589	Depositor
Minimum map value	-0.275	Depositor
Average map value	0.001	Depositor
Map value standard deviation	0.019	Depositor
Recommended contour level	0.0504	Depositor
Map size (\AA)	238.592, 238.592, 238.592	wwPDB
Map dimensions	256, 256, 256	wwPDB
Map angles ($^\circ$)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (\AA)	0.932, 0.932, 0.932	Depositor

5 Model quality [i](#)

5.1 Standard geometry [i](#)

Bond lengths and bond angles in the following residue types are not validated in this section: 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	0.19	0/9333	0.30	0/12680
2	B	0.16	0/383	0.30	0/516
2	C	0.12	0/271	0.26	0/358
2	D	0.13	0/271	0.26	0/358
2	E	0.14	0/271	0.31	0/358
All	All	0.18	0/10529	0.30	0/14270

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts [i](#)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	9122	9250	9223	148	0
2	B	377	402	401	11	0
2	C	271	295	295	6	0
2	D	271	295	295	10	0
2	E	271	295	295	5	0
3	A	1	0	0	0	0
All	All	10313	10537	10509	172	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.

The worst 5 of 172 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:568:ARG:NE	2:B:157:GLU:OE1	2.02	0.90
1:A:993:CYS:SG	1:A:1212:THR:OG1	2.31	0.89
1:A:1100:ARG:NH2	1:A:1219:SER:O	2.13	0.82
1:A:168:ASP:OD1	1:A:169:THR:N	2.15	0.80
1:A:125:LEU:HD11	1:A:773:ILE:HD12	1.64	0.77

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	1138/1756 (65%)	1082 (95%)	56 (5%)	0	100	100
2	B	48/217 (22%)	44 (92%)	4 (8%)	0	100	100
2	C	32/217 (15%)	32 (100%)	0	0	100	100
2	D	32/217 (15%)	32 (100%)	0	0	100	100
2	E	32/217 (15%)	31 (97%)	1 (3%)	0	100	100
All	All	1282/2624 (49%)	1221 (95%)	61 (5%)	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	1011/1528 (66%)	1011 (100%)	0	100	100
2	B	44/196 (22%)	44 (100%)	0	100	100
2	C	32/196 (16%)	32 (100%)	0	100	100
2	D	32/196 (16%)	32 (100%)	0	100	100
2	E	32/196 (16%)	32 (100%)	0	100	100
All	All	1151/2312 (50%)	1151 (100%)	0	100	100

There are no protein residues with a non-rotameric sidechain to report.

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 6 such sidechains are listed below:

Mol	Chain	Res	Type
1	A	1050	HIS
1	A	1094	HIS
1	A	1106	HIS
1	A	327	HIS
1	A	226	HIS

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 ⓘ

There are no oligosaccharides in this entry.

5.6 Ligand geometry ⓘ

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

There are no such residues in this entry.

5.8 Polymer linkage issues

There are no chain breaks in this entry.

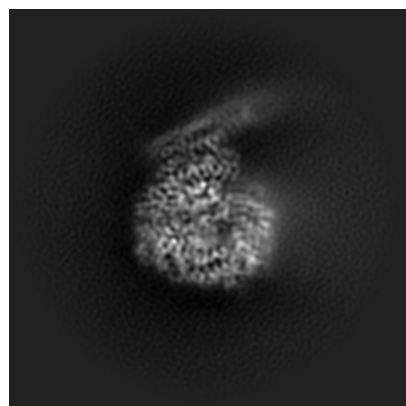
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-51770. These allow visual inspection of the internal detail of the map and identification of artifacts.

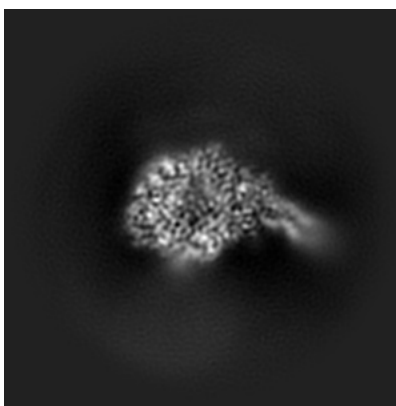
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

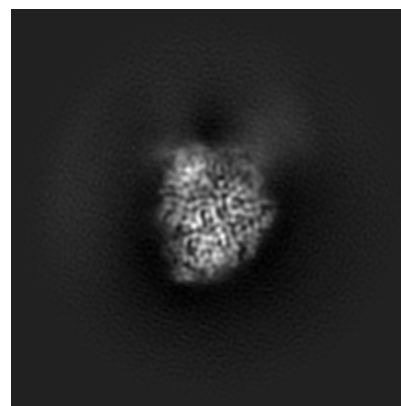
6.1.1 Primary map



X

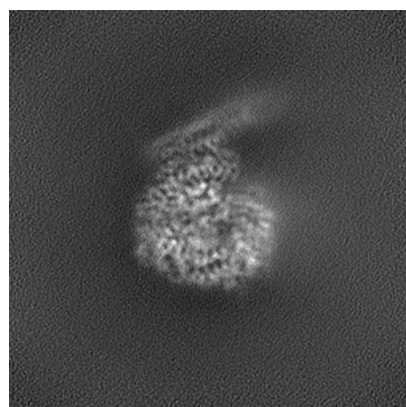


Y

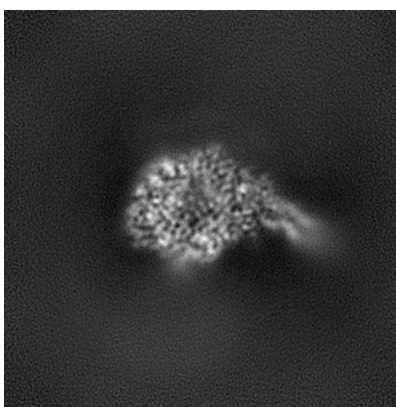


Z

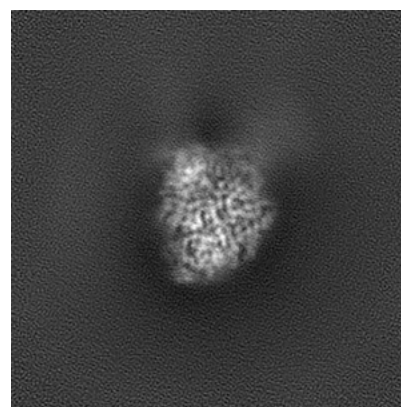
6.1.2 Raw map



X



Y

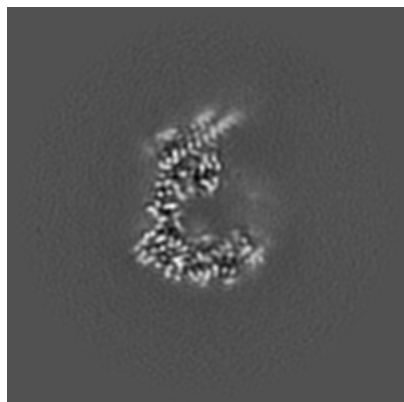


Z

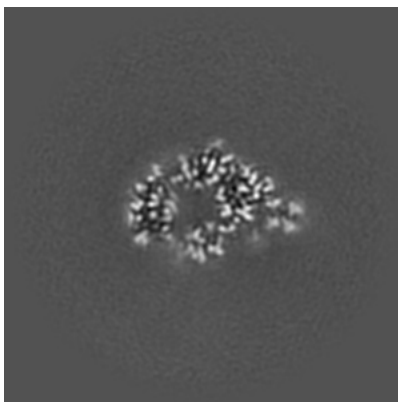
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

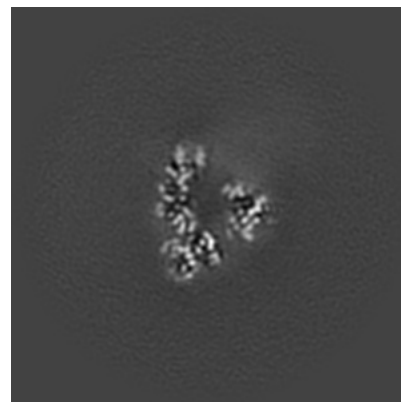
6.2.1 Primary map



X Index: 128

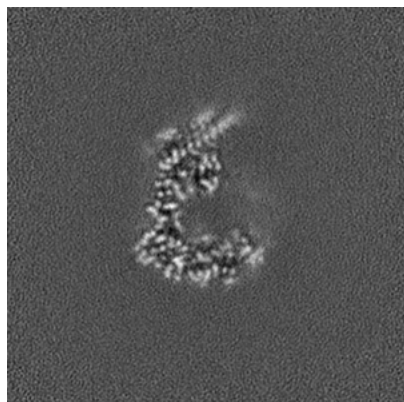


Y Index: 128

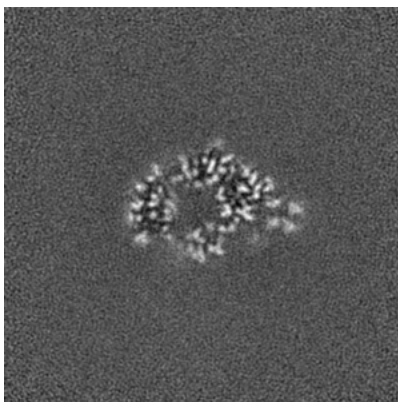


Z Index: 128

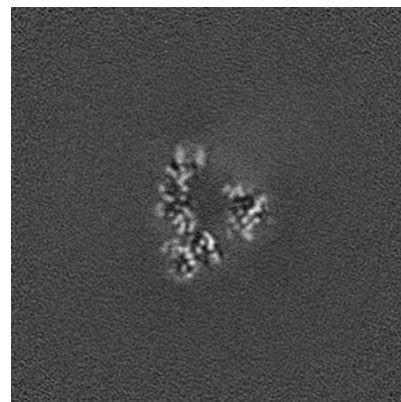
6.2.2 Raw map



X Index: 128



Y Index: 128

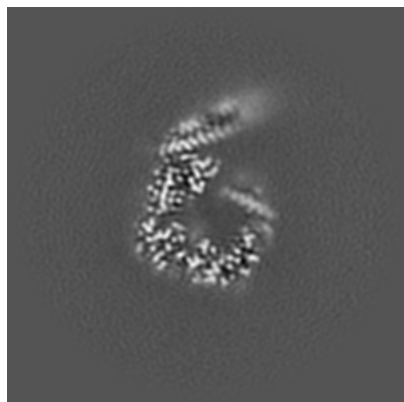


Z Index: 128

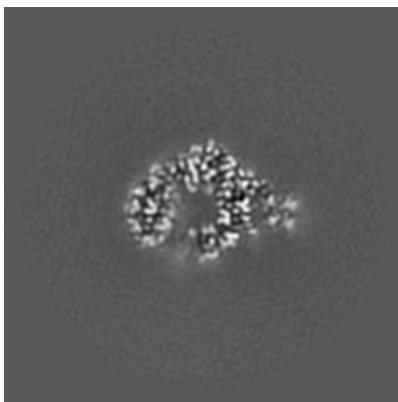
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

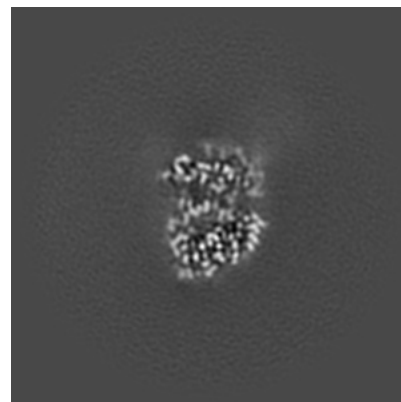
6.3.1 Primary map



X Index: 120

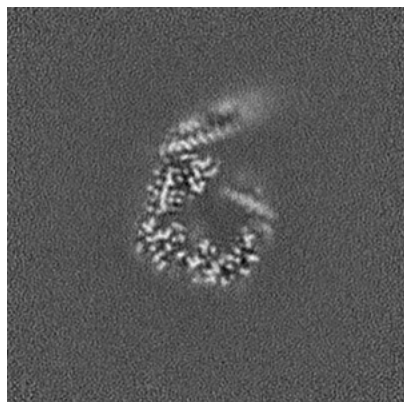


Y Index: 124

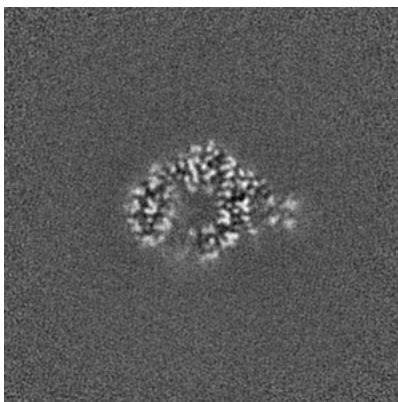


Z Index: 104

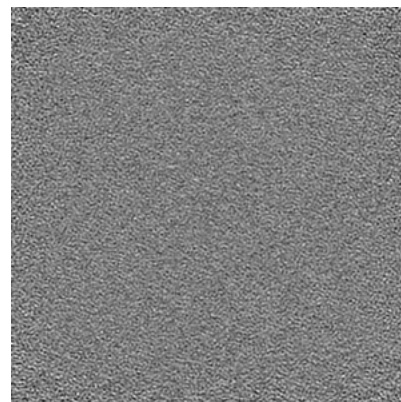
6.3.2 Raw map



X Index: 120



Y Index: 124

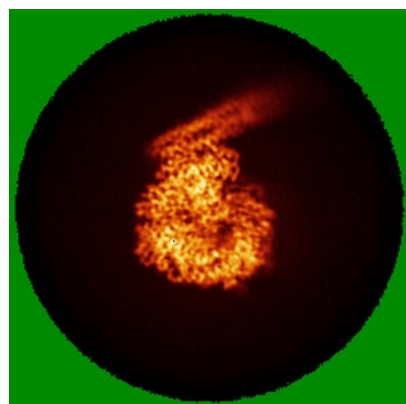


Z Index: 0

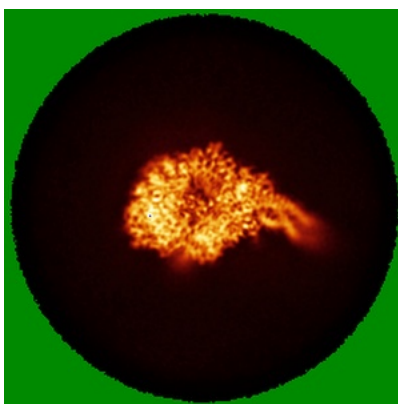
The images above show the largest variance slices of the map in three orthogonal directions.

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

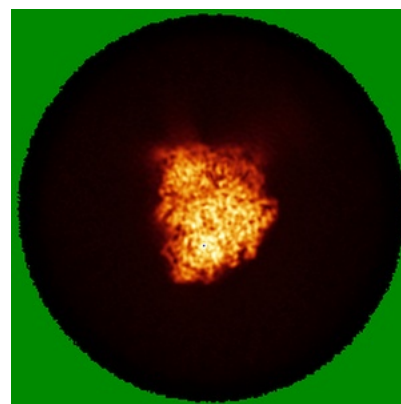
6.4.1 Primary map



X

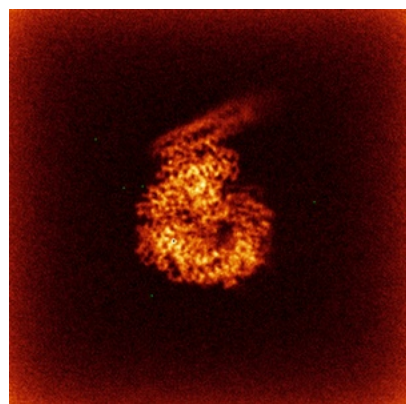


Y

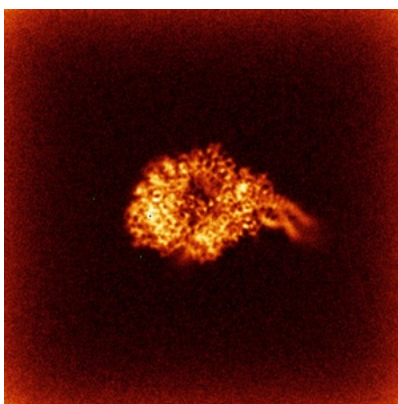


Z

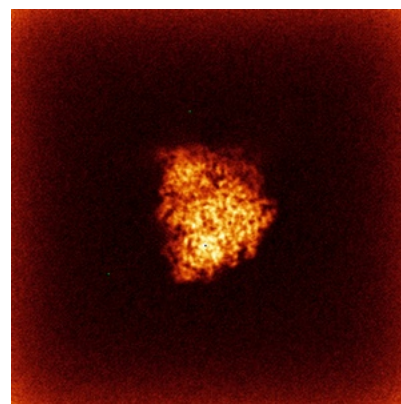
6.4.2 Raw map



X



Y

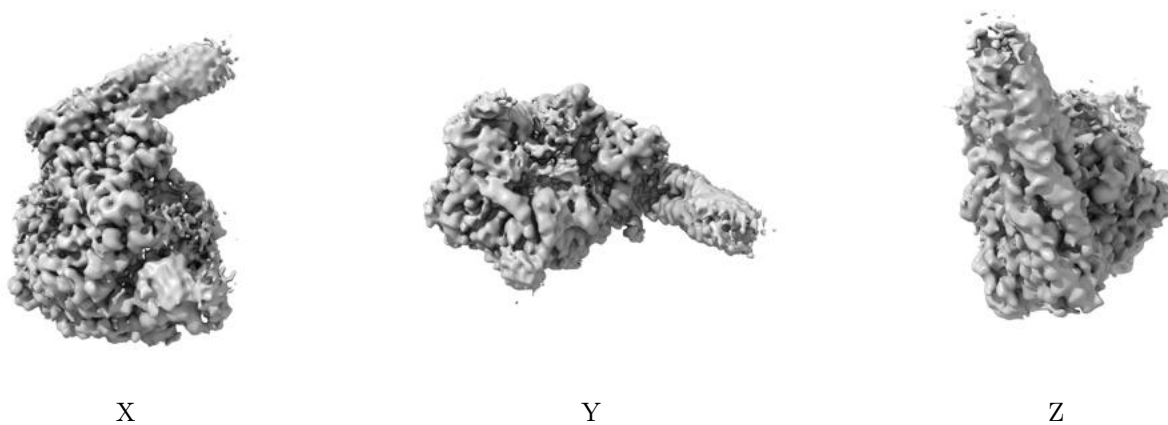


Z

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

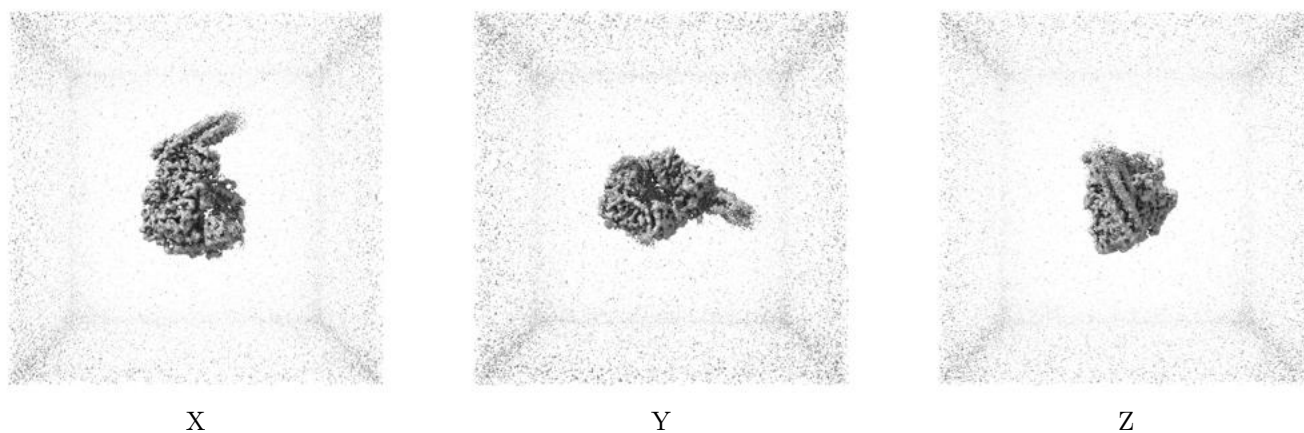
6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.0504. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map



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

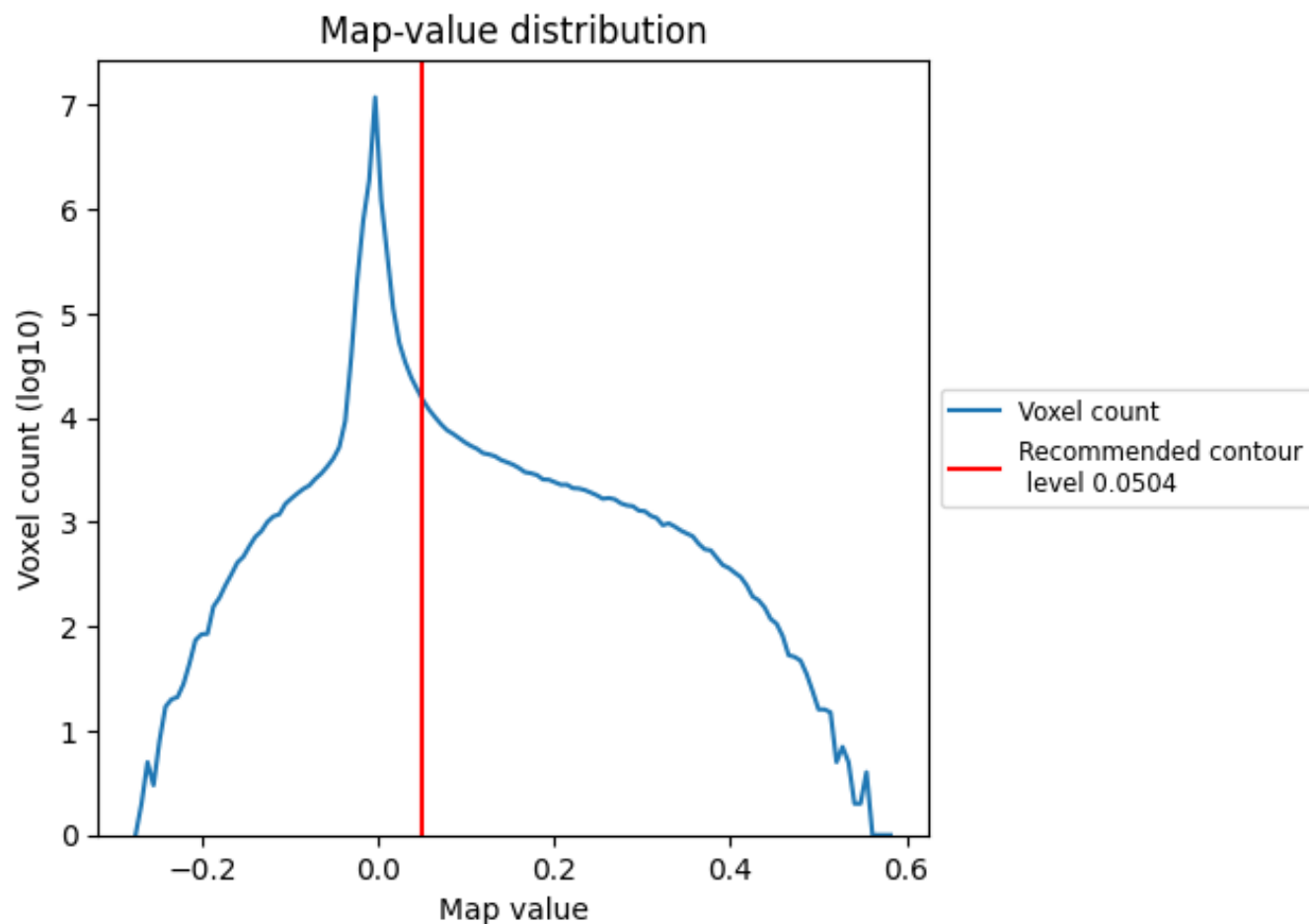
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

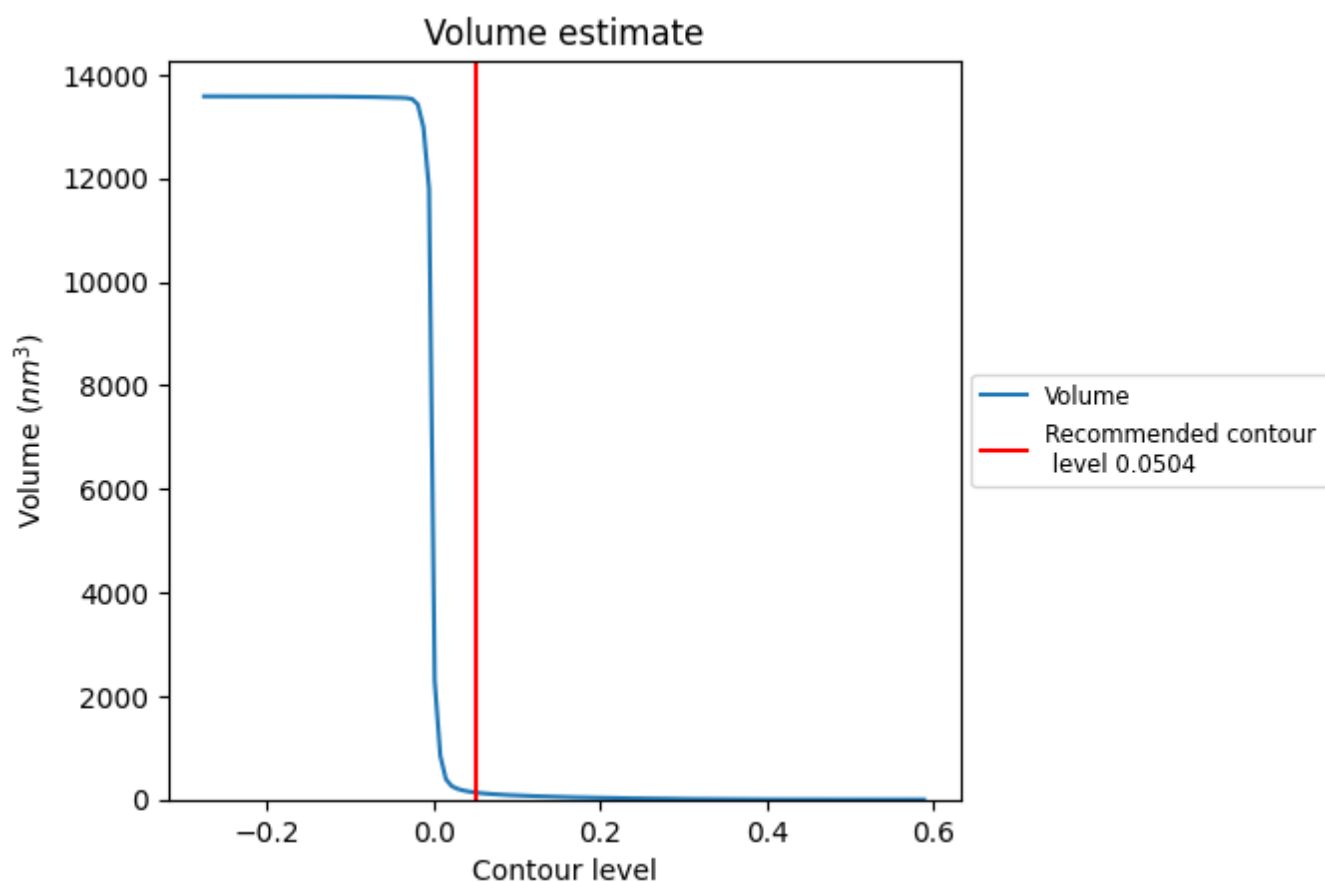
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution [i](#)



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

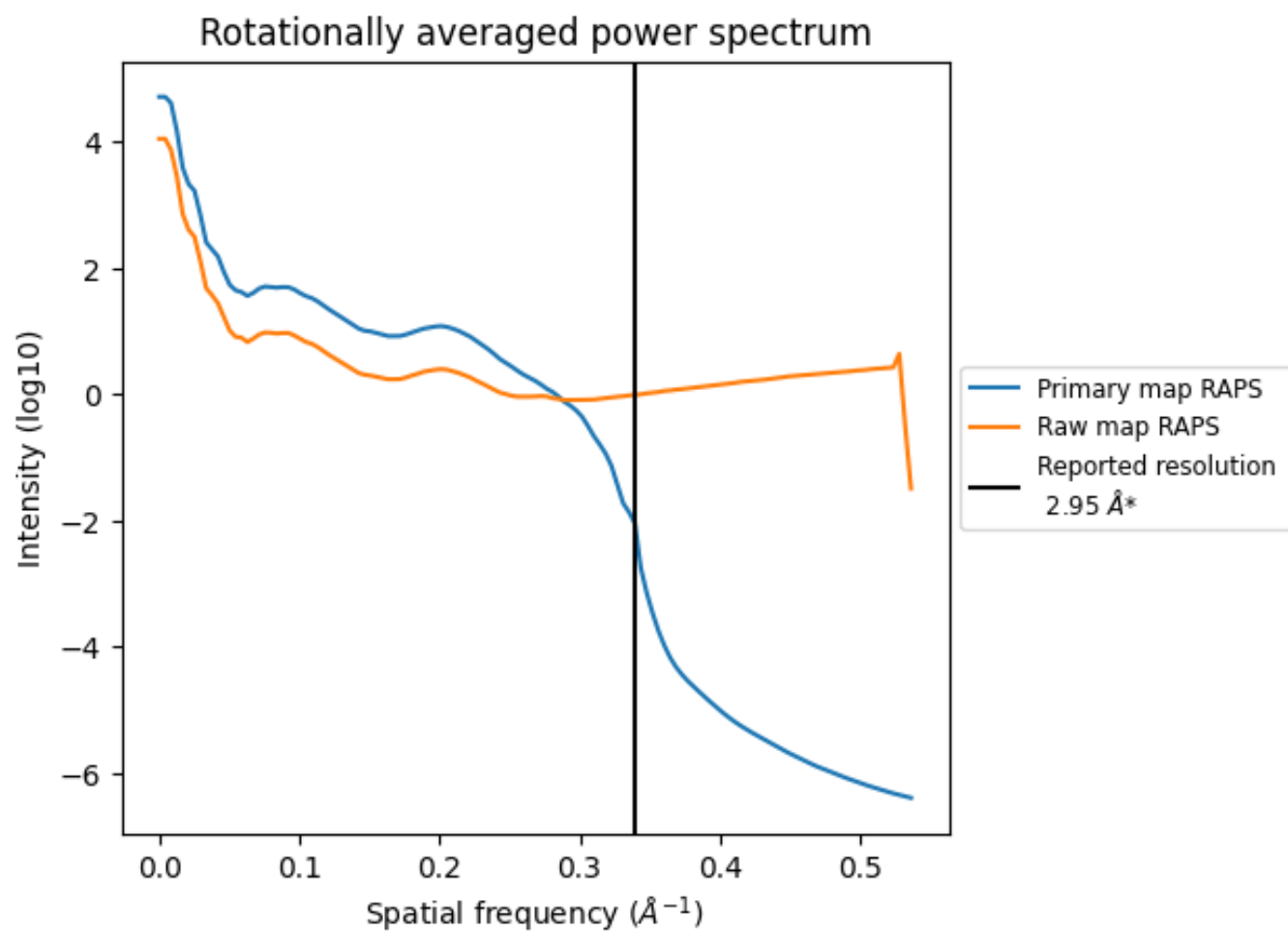
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 136 nm³; this corresponds to an approximate mass of 123 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 ⓘ

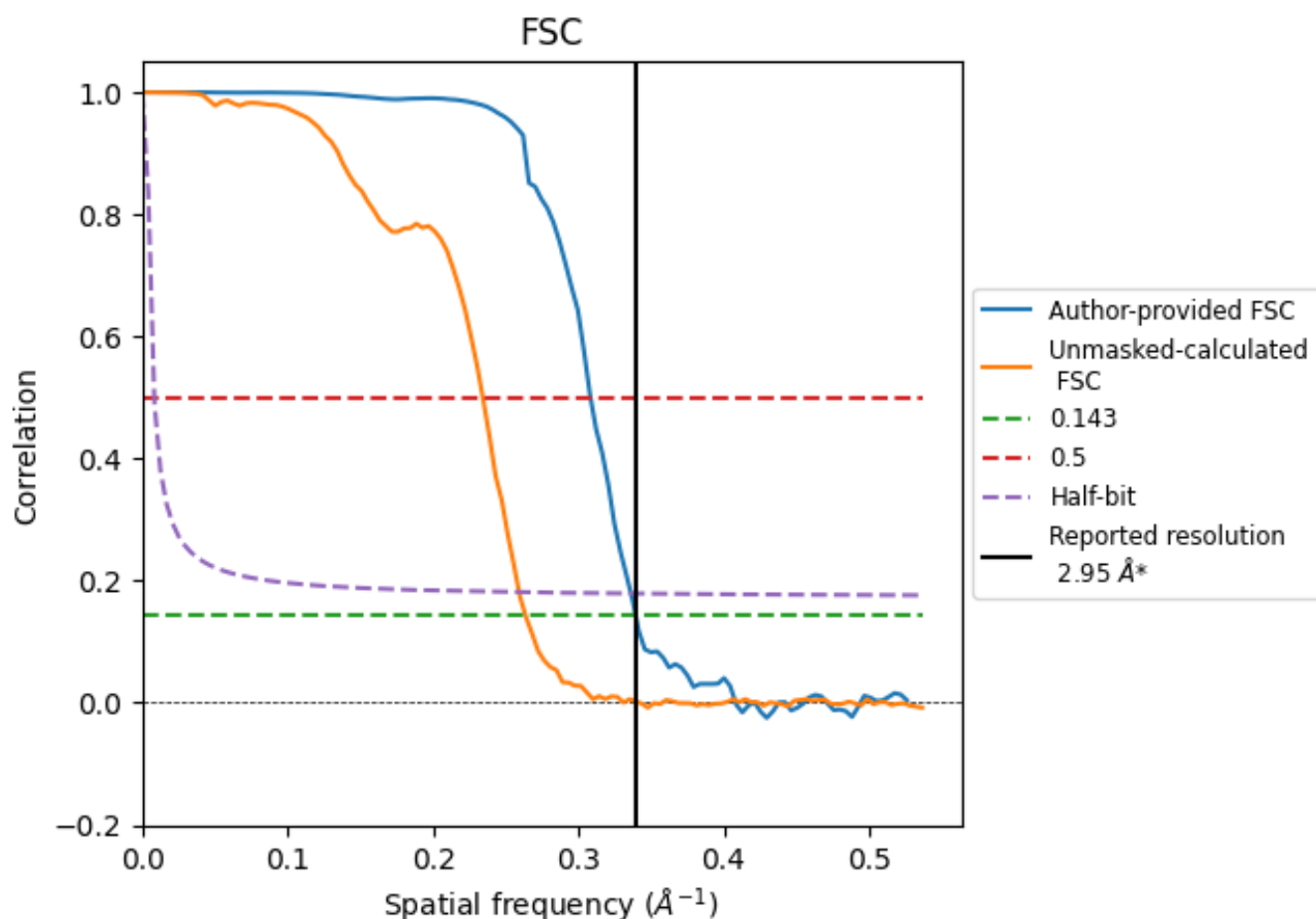


*Reported resolution corresponds to spatial frequency of 0.339 Å⁻¹

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 0.339 \AA^{-1}

8.2 Resolution estimates [i](#)

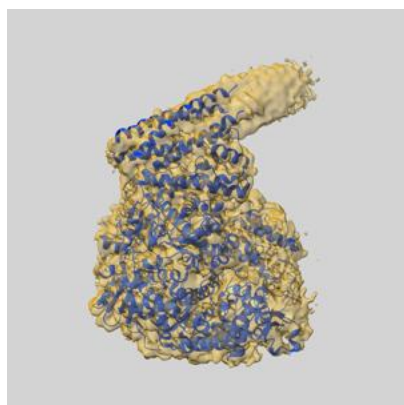
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.95	-	-
Author-provided FSC curve	2.95	3.24	2.97
Unmasked-calculated*	3.79	4.27	3.86

*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 2.95 by more than 10 %

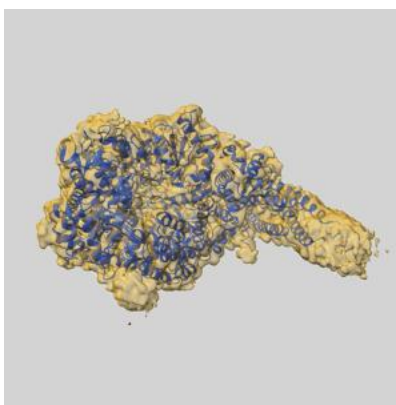
9 Map-model fit [i](#)

This section contains information regarding the fit between EMDB map EMD-51770 and PDB model 9H1Q. Per-residue inclusion information can be found in [section 3](#) on [page 7](#).

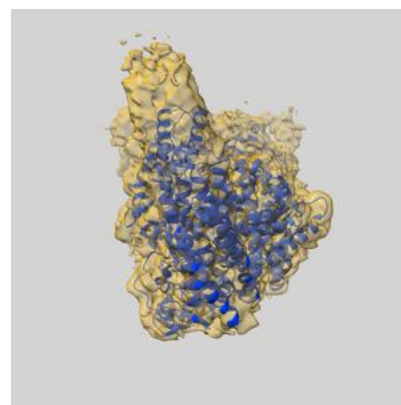
9.1 Map-model overlay [i](#)



X



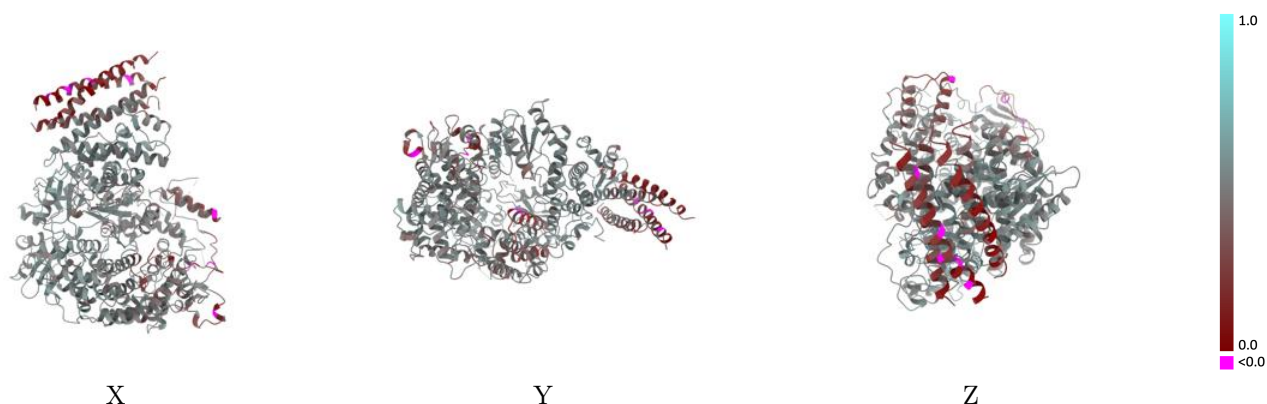
Y



Z

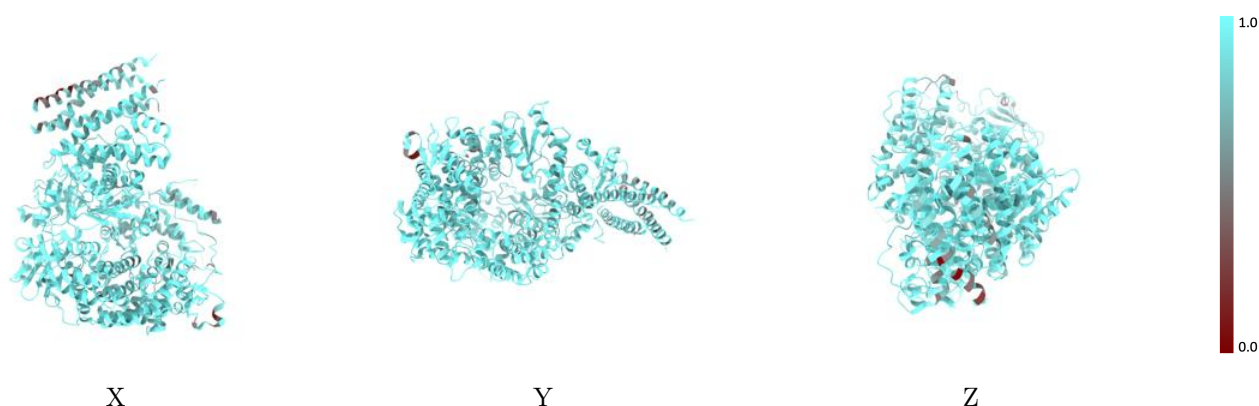
The images above show the 3D surface view of the map at the recommended contour level 0.0504 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



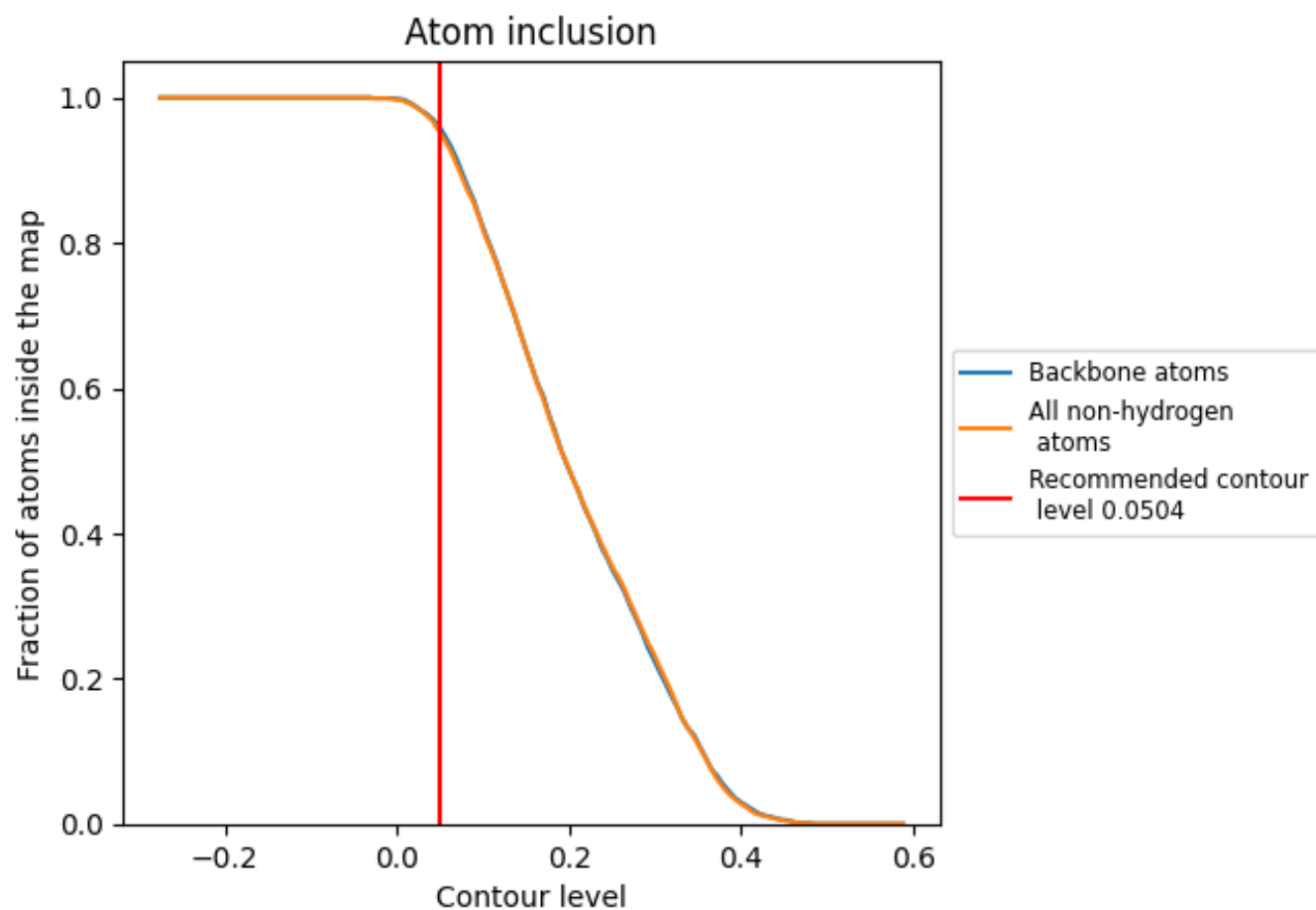
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions at which atoms can be resolved. Low Q-score values may therefore be expected for many entries.

9.3 Atom inclusion mapped to coordinate model [i](#)



The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.0504).

9.4 Atom inclusion [i](#)



At the recommended contour level, 96% of all backbone atoms, 95% 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 (0.0504) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	<div></div> 0.9510	<div></div> 0.4670
A	<div></div> 0.9640	<div></div> 0.4880
B	<div></div> 0.9650	<div></div> 0.4660
C	<div></div> 0.8470	<div></div> 0.1990
D	<div></div> 0.7460	<div></div> 0.1560
E	<div></div> 0.8510	<div></div> 0.3390

