



Full wwPDB EM Validation Report ⓘ

Sep 29, 2024 – 01:31 AM EDT

PDB ID : 8ESB
EMDB ID : EMD-28574
Title : CryoEM structure of HLA-A2 bound to MAGEA8 (232-241) peptide
Authors : Saotome, K.; Franklin, M.C.
Deposited on : 2022-10-13
Resolution : 3.12 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.dev113
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) : 2.39

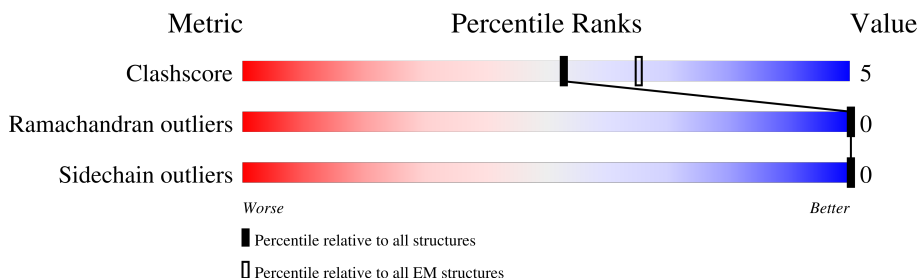
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY



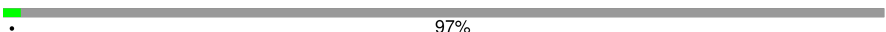
The reported resolution of this entry is 3.12 Å.

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	448	
1	B	448	
1	C	448	

2 Entry composition

There is only 1 type of molecule in this entry. The entry contains 3140 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 Beta-2-microglobulin,HLA class I antigen,MAGE-A8 peptide chimera.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	273	Total	C	N	O	S	0	0
			2223	1389	406	418	10		
1	B	99	Total	C	N	O	S	0	0
			828	528	140	157	3		
1	C	12	Total	C	N	O	S	0	0
			89	53	17	18	1		

There are 63 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-19	GLY	-	linker	PDB ?
A	-18	GLY	-	linker	PDB ?
A	-17	GLY	-	linker	PDB ?
A	-16	GLY	-	linker	PDB ?
A	-15	SER	-	linker	PDB ?
A	-14	GLY	-	linker	PDB ?
A	-13	GLY	-	linker	PDB ?
A	-12	GLY	-	linker	PDB ?
A	-11	GLY	-	linker	PDB ?
A	-10	SER	-	linker	PDB ?
A	-9	GLY	-	linker	PDB ?
A	-8	GLY	-	linker	PDB ?
A	-7	GLY	-	linker	PDB ?
A	-6	GLY	-	linker	PDB ?
A	-5	SER	-	linker	PDB ?
A	-4	GLY	-	linker	PDB ?
A	-3	GLY	-	linker	PDB ?
A	-2	GLY	-	linker	PDB ?
A	-1	GLY	-	linker	PDB ?
A	0	SER	-	linker	PDB ?
A	84	CYS	TYR	conflict	UNP Q53Z42
B	100	GLY	-	linker	PDB ?
B	101	GLY	-	linker	PDB ?

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Chain	Residue	Modelled	Actual	Comment	Reference
B	102	GLY	-	linker	PDB ?
B	103	GLY	-	linker	PDB ?
B	104	SER	-	linker	PDB ?
B	105	GLY	-	linker	PDB ?
B	106	GLY	-	linker	PDB ?
B	107	GLY	-	linker	PDB ?
B	108	GLY	-	linker	PDB ?
B	109	SER	-	linker	PDB ?
B	110	GLY	-	linker	PDB ?
B	111	GLY	-	linker	PDB ?
B	112	GLY	-	linker	PDB ?
B	113	GLY	-	linker	PDB ?
B	114	SER	-	linker	PDB ?
B	115	GLY	-	linker	PDB ?
B	116	GLY	-	linker	PDB ?
B	117	GLY	-	linker	PDB ?
B	118	GLY	-	linker	PDB ?
B	119	SER	-	linker	PDB ?
B	203	CYS	TYR	conflict	UNP Q53Z42
C	125	GLY	-	linker	PDB ?
C	126	GLY	-	linker	PDB ?
C	127	GLY	-	linker	PDB ?
C	128	GLY	-	linker	PDB ?
C	129	SER	-	linker	PDB ?
C	130	GLY	-	linker	PDB ?
C	131	GLY	-	linker	PDB ?
C	132	GLY	-	linker	PDB ?
C	133	GLY	-	linker	PDB ?
C	134	SER	-	linker	PDB ?
C	135	GLY	-	linker	PDB ?
C	136	GLY	-	linker	PDB ?
C	137	GLY	-	linker	PDB ?
C	138	GLY	-	linker	PDB ?
C	139	SER	-	linker	PDB ?
C	140	GLY	-	linker	PDB ?
C	141	GLY	-	linker	PDB ?
C	142	GLY	-	linker	PDB ?
C	143	GLY	-	linker	PDB ?
C	144	SER	-	linker	PDB ?
C	228	CYS	TYR	conflict	UNP Q53Z42

97%

GLU	GLU	ASP	THR	CYS	THR	VAL	GLN	GLY	ASN	G1
GLU	GLU	THR	CYS	VAL	GLU	GLY	ARG	SER	GLU	E7
LEU	LEU	GLN	GLU	THR	ASP	GLU	PRO	GLY	ILE	G11
GLY	GLY	THR	LEU	ARG	ARG	ARG	ARG	GLY	GLU	G12
GLU	GLU	LEU	ARG	ARG	PHE	ALA	ALA	GLY	VAL	GLY
LYS	LYS	VAL	THR	ARG	LEU	LEU	THR	SER	GLU	GLY
LEU	LEU	GLU	LEU	GLY	GLY	ILE	ILE	GLY	HIS	GLY
ILE	ILE	THR	GLU	THR	TYR	TYR	GLU	GLY	SER	GLY
SER	SER	ARG	ASN	GLY	HIS	GLN	GLN	GLY	ASP	GLY
GLU	GLU	PRO	GLY	GLY	GLN	GLU	SER	SER	LEU	GLY
GLU	GLU	ALA	TYR	TYR	TYR	GLY	GLY	GLY	PHE	GLY
ASP	ASP	GLY	GLU	GLU	ALA	PRO	GLY	GLY	GLY	GLY
LEU	LEU	ASP	THR	THR	TYR	TYR	GLU	SER	LYS	GLY
ILE	ILE	GLY	LEU	ASP	ASP	ASP	TYR	SER	ASP	GLY
HIS	HIS	THR	GLN	GLY	GLY	GLY	TRP	SER	TRP	SER
HIS	HIS	PHE	ARG	ARG	LYS	LYS	ASP	GLY	GLY	ILE
HIS	HIS	GLN	THR	THR	ASP	ASP	GLY	SER	PHE	GLN
HIS	HIS	LYS	ASP	ALA	TYR	ILE	THR	SER	TYR	ARG
HIS	HIS	TRP	ALA	THR	ILE	ALA	ARG	MET	LEU	THR
ALA	ALA	ALA	LYS	LEU	LEU	LEU	LYS	ARG	LEU	PRO
VAL	VAL	VAL	THR	THR	LYS	VAL	VAL	TYR	TYR	LYS
VAL	VAL	VAL	HIS	ASP	GLY	LYS	PHE	PHE	THR	ILE
PRO	PRO	VAL	THR	MET	ASP	ALA	ALA	THR	GLU	VAL
PRO	PRO	THR	THR	THR	LEU	HIS	HIS	SER	GLY	THR
GLY	GLY	SER	HIS	HIS	ARG	GLN	SER	SER	PHE	TYR
GLN	GLU	GLN	ALA	VAL	TRP	THR	THR	SER	PRO	ARG
GLN	GLN	GLN	SER	ALA	ALA	HIS	HIS	ARG	GLU	HIS
ARG	ARG	ARG	ASP	ALA	ASP	VAL	VAL	ARG	LYS	ALA
THR	THR	THR	HIS	HIS	ASP	ALA	ASP	ARG	ASP	GLU
GLU	GLY	CYS	ALA	ALA	ALA	GLY	LEU	GLY	GLU	ASN
HIS	HIS	THR	ALA	ALA	MET	LEU	LEU	GLY	TYR	ASN
LYS	LYS	THR	THR	THR	ALA	THR	THR	PRO	ALA	LYS
VAL	VAL	VAL	LEU	LEU	GLN	LEU	ARG	CYS	CYS	THR
GLN	GLN	GLN	ARG	THR	THR	THR	PHE	VAL	VAL	VAL
HIS	HIS	HIS	CYS	CYS	THR	LYS	GLY	ILE	ASN	ASN
GLU	GLY	GLY	TRP	ALA	LYS	HIS	TYR	ALA	HIS	LEU
LEU	LEU	LEU	LEU	LYS	LYS	LYS	ASN	VAL	VAL	ASN
PRO	PRO	PRO	THR	THR	TRP	GLN	SER	VAL	THR	CYS
PRO	PRO	LYS	PHE	PHE	GLU	GLN	THR	VAL	TYR	VAL
LEU	LEU	LEU	TYR	TYR	ALA	GLU	ALA	ASP	SER	SER
THR	THR	THR	ALA	HIS	ALA	GLY	GLY	ASP	GLN	GLY
LEU	LEU	ARG	ALA	VAL	VAL	VAL	GLN	THR	PRO	PHE
ARG	ARG	THR	ILE	ALA	ALA	ALA	HIS	PHE	LYS	HIS
TRP	TRP	TRP	GLU	GLU	GLU	THR	VAL	VAL	VAL	PRO
GLU	GLU	GLU	LEU	GLN	LEU	VAL	VAL	ARG	LYS	SER
PRO	PRO	PRO	THR	THR	LEU	ARG	GLN	PHE	TRP	ILE
GLU	GLU	GLU	THR	ARG	THR	LEU	GLN	PHE	TRP	GLU
GLU	GLU	GLN	GLN	GLN	ALA	ARG	MET	SER	ASP	VAL
LYS	LYS	LYS	TYR	TYR	TYR	THR	GLY	ASP	ASP	GLY
ILE	ILE	ILE	GLY	GLY	LEU	GLY	GLY	ALA	MET	LEU
SER	SER	SER	GLU	GLU	GLY	GLY	CYS	ASP	GLY	LYS

4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	121731	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 ($e^-/\text{\AA}^2$)	40	Depositor
Minimum defocus (nm)	1400	Depositor
Maximum defocus (nm)	2400	Depositor
Magnification	Not provided	
Image detector	GATAN K3 BIOQUANTUM (6k x 4k)	Depositor
Maximum map value	76.263	Depositor
Minimum map value	-45.889	Depositor
Average map value	-0.000	Depositor
Map value standard deviation	1.000	Depositor
Recommended contour level	2	Depositor
Map size (Å)	306.0, 306.0, 306.0	wwPDB
Map dimensions	360, 360, 360	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.85, 0.85, 0.85	Depositor

5 Model quality [i](#)

5.1 Standard geometry [i](#)

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	0/2287	0.55	1/3103 (0.0%)
1	B	0.38	0/851	0.49	0/1152
1	C	0.35	0/90	0.54	0/119
All	All	0.34	0/3228	0.54	1/4374 (0.0%)

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed($^{\circ}$)	Ideal($^{\circ}$)
1	A	156	LEU	CA-CB-CG	5.51	127.98	115.30

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	2223	0	2078	29	0
1	B	828	0	794	3	0
1	C	89	0	79	3	0
All	All	3140	0	2951	31	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 5.

All (31) 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:122:ASP:OD1	1:B:60:TRP:NE1	2.29	0.64
1:A:107:TRP:O	1:A:169:ARG:NH1	2.33	0.61
1:A:191:HIS:HB2	1:A:274:TRP:CH2	2.36	0.61
1:A:14:ARG:NH2	1:A:19:GLU:O	2.36	0.57
1:A:153:ALA:O	1:A:157:ARG:HG3	2.05	0.57
1:A:28:VAL:HG11	1:A:179:LEU:HD13	1.90	0.54
1:A:191:HIS:HB2	1:A:274:TRP:HH2	1.73	0.53
1:A:146:LYS:HE2	1:C:11:GLY:HA3	1.91	0.51
1:A:215:LEU:HD12	1:A:243:LYS:HD3	1.90	0.51
1:A:163:THR:HG22	1:A:167:TRP:CD1	2.45	0.51
1:A:274:TRP:CD1	1:A:276:PRO:HD3	2.46	0.51
1:A:97:ARG:NH2	1:C:7:GLU:OE2	2.43	0.50
1:A:156:LEU:O	1:A:156:LEU:HD23	2.12	0.50
1:A:28:VAL:HG12	1:A:29:ASP:H	1.78	0.49
1:A:143:THR:HG22	1:C:11:GLY:O	2.12	0.49
1:A:77:ASP:OD2	1:A:116:TYR:OH	2.24	0.48
1:A:29:ASP:OD1	1:A:30:ASP:N	2.47	0.46
1:A:106:ASP:OD2	1:A:108:ARG:HG3	2.15	0.46
1:A:136:ALA:H	1:A:140:ALA:HB3	1.81	0.45
1:A:13:SER:HB2	1:A:78:LEU:HD13	2.00	0.43
1:A:207:SER:HA	1:A:240:THR:HB	2.00	0.43
1:A:191:HIS:ND1	1:A:192:HIS:O	2.48	0.43
1:A:259:CYS:HB3	1:A:272:LEU:HB2	2.00	0.43
1:B:23:LEU:HB2	1:B:70:PHE:CD1	2.54	0.42
1:A:207:SER:O	1:A:207:SER:OG	2.37	0.41
1:B:91:LYS:HB2	1:B:91:LYS:HE2	1.83	0.41
1:A:28:VAL:HG12	1:A:29:ASP:N	2.36	0.41
1:A:81:LEU:HD23	1:A:81:LEU:HA	1.90	0.40
1:A:157:ARG:NH1	1:A:161:GLU:OE2	2.54	0.40
1:A:139:ALA:O	1:A:143:THR:HG23	2.21	0.40
1:A:172:LEU:HD23	1:A:172:LEU:HA	1.91	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	269/448 (60%)	258 (96%)	11 (4%)	0	100	100
1	B	97/448 (22%)	93 (96%)	4 (4%)	0	100	100
1	C	10/448 (2%)	8 (80%)	2 (20%)	0	100	100
All	All	376/1344 (28%)	359 (96%)	17 (4%)	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	229/368 (62%)	229 (100%)	0	100	100
1	B	94/368 (26%)	94 (100%)	0	100	100
1	C	9/368 (2%)	9 (100%)	0	100	100
All	All	332/1104 (30%)	332 (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. There are no such sidechains identified.

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](#)

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.

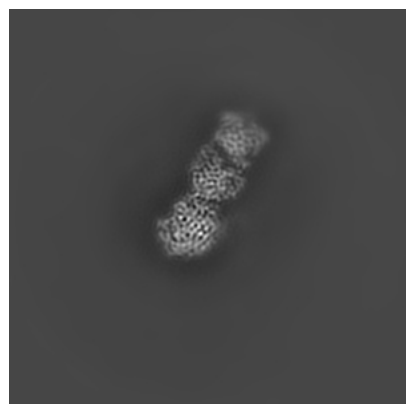
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-28574. These allow visual inspection of the internal detail of the map and identification of artifacts.

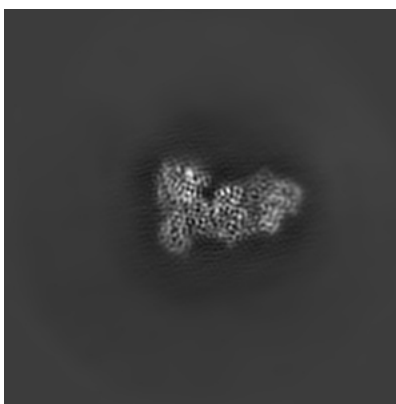
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

6.1.1 Primary map



X

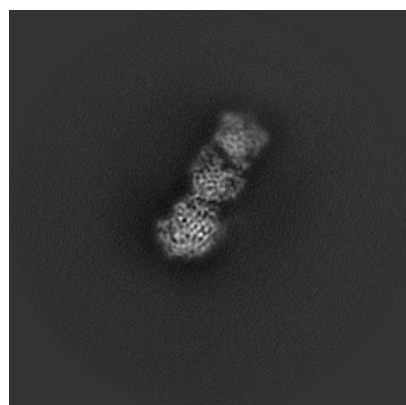


Y

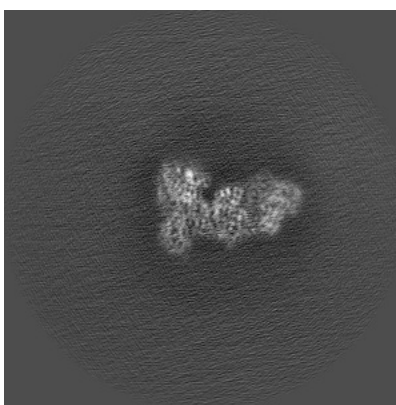


Z

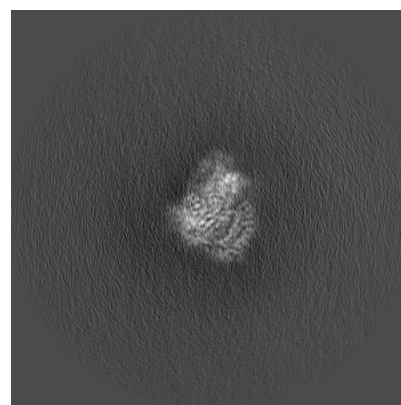
6.1.2 Raw map



X



Y

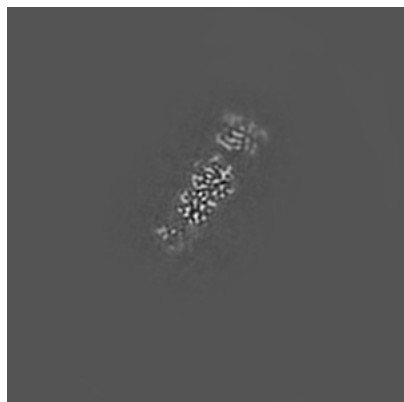


Z

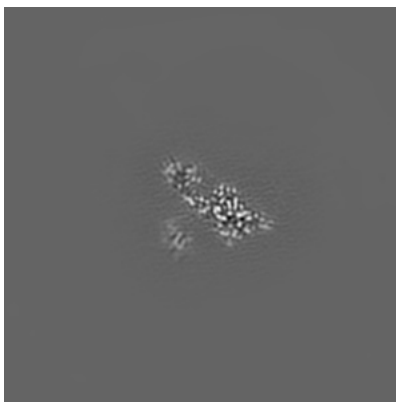
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

6.2.1 Primary map



X Index: 180

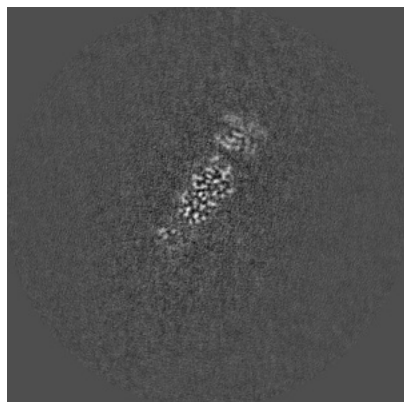


Y Index: 180

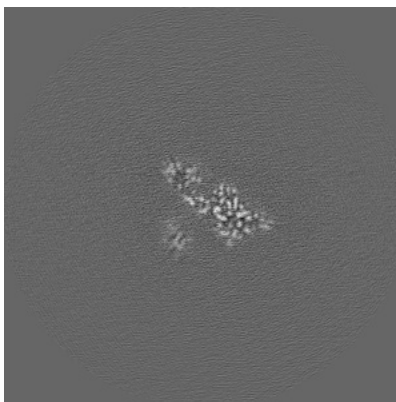


Z Index: 180

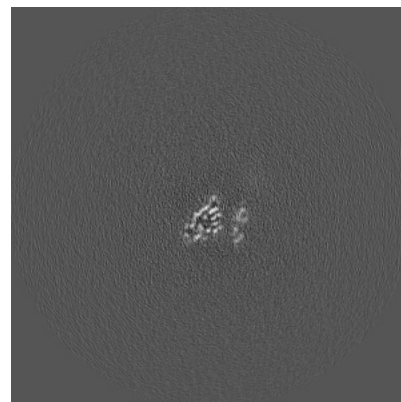
6.2.2 Raw map



X Index: 180



Y Index: 180

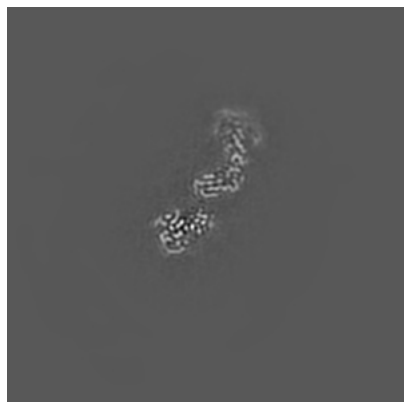


Z Index: 180

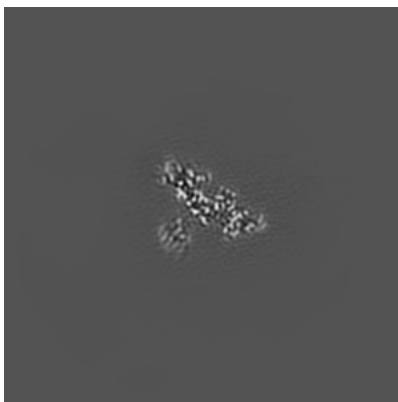
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

6.3.1 Primary map



X Index: 194

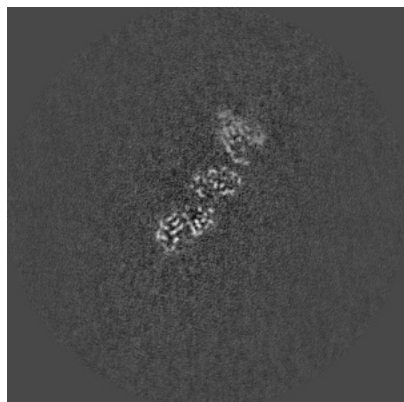


Y Index: 173

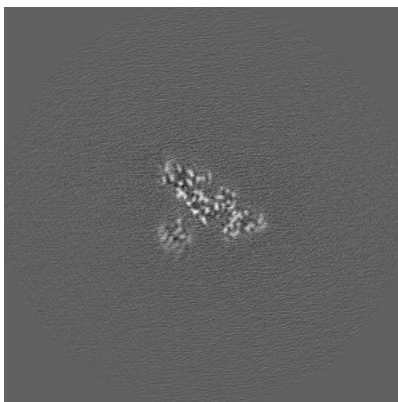


Z Index: 167

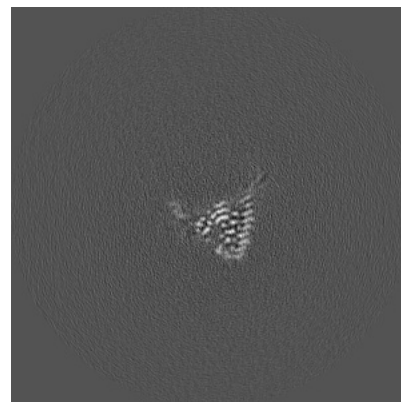
6.3.2 Raw map



X Index: 189



Y Index: 173

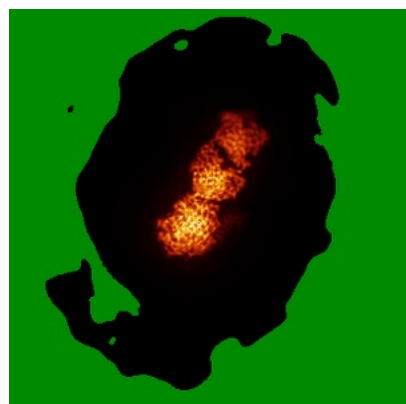


Z Index: 167

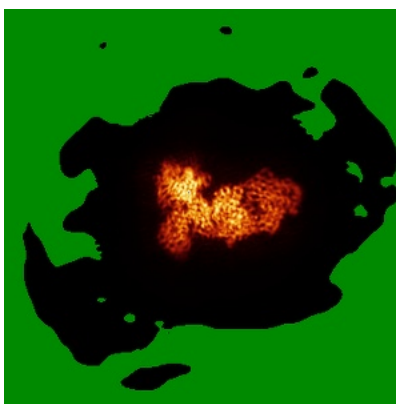
The images above show the largest variance slices of the map in three orthogonal directions.

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

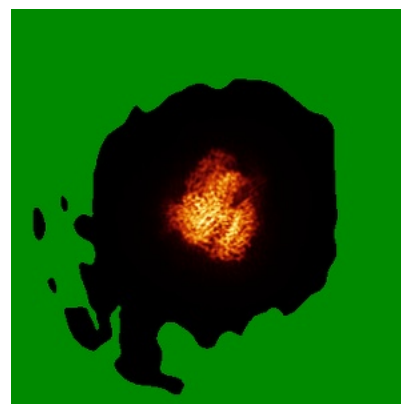
6.4.1 Primary map



X

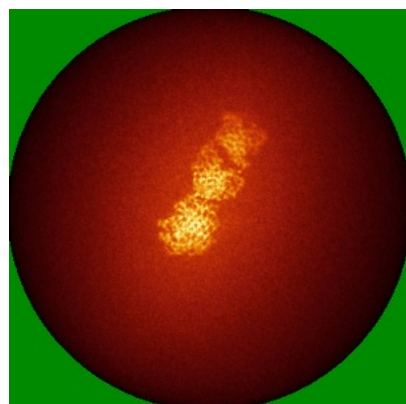


Y

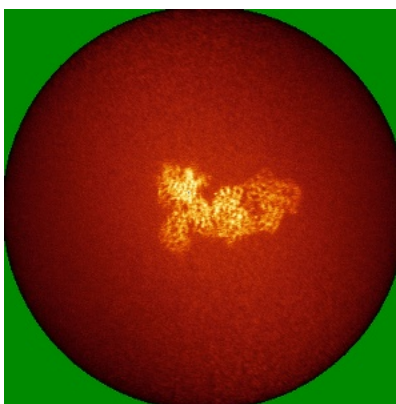


Z

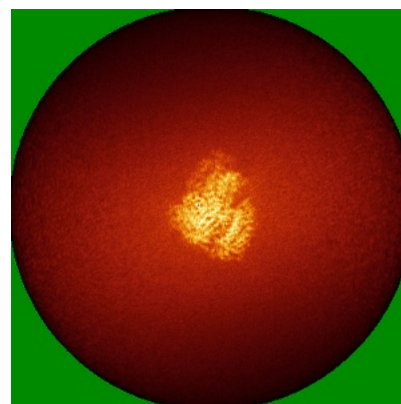
6.4.2 Raw map



X



Y

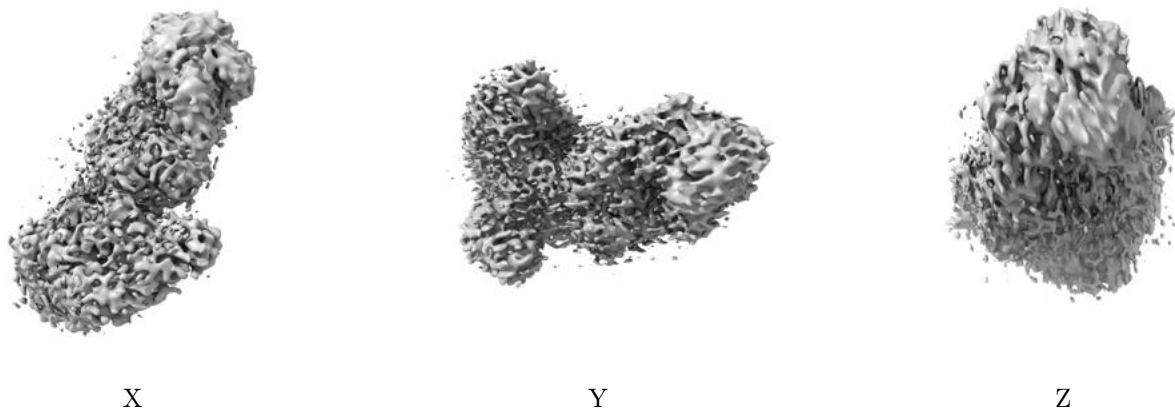


Z

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.

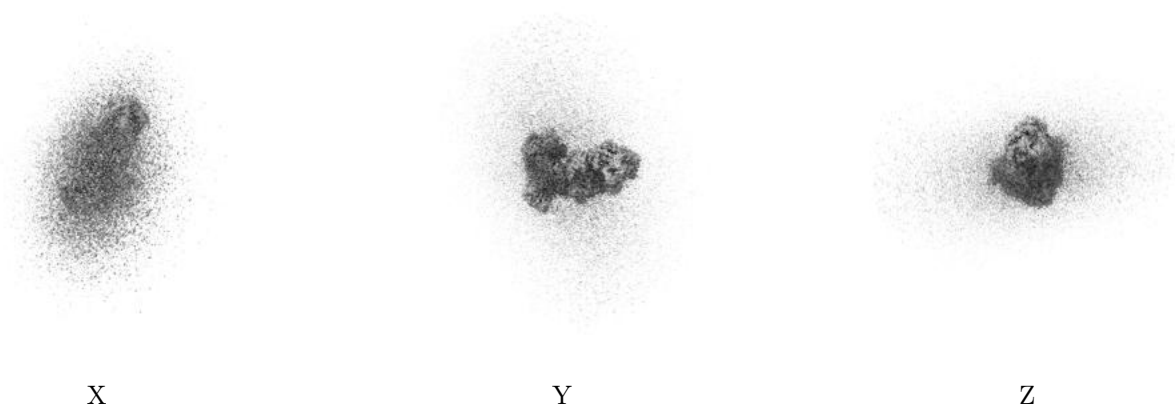
6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 2.0. 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.

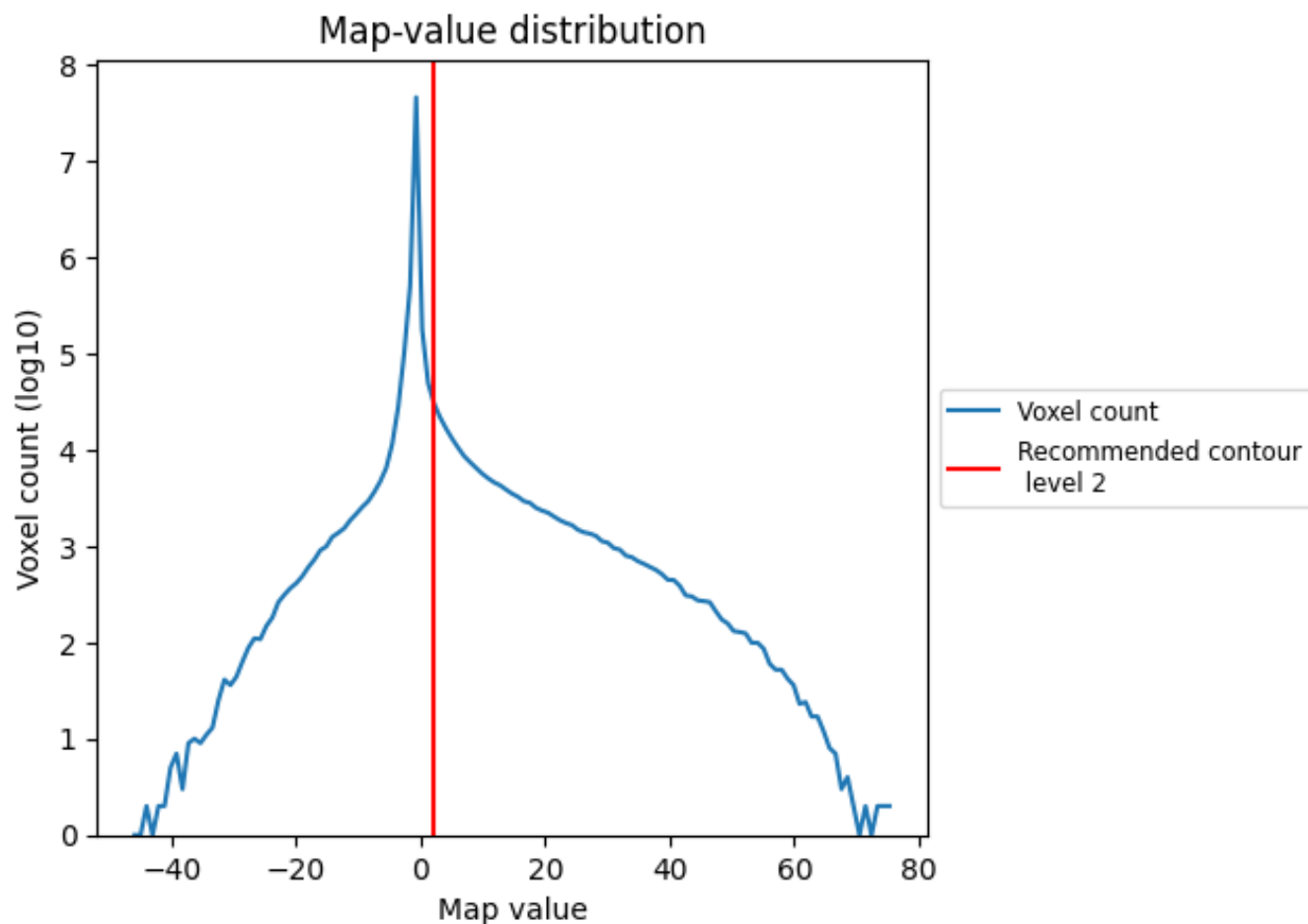
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

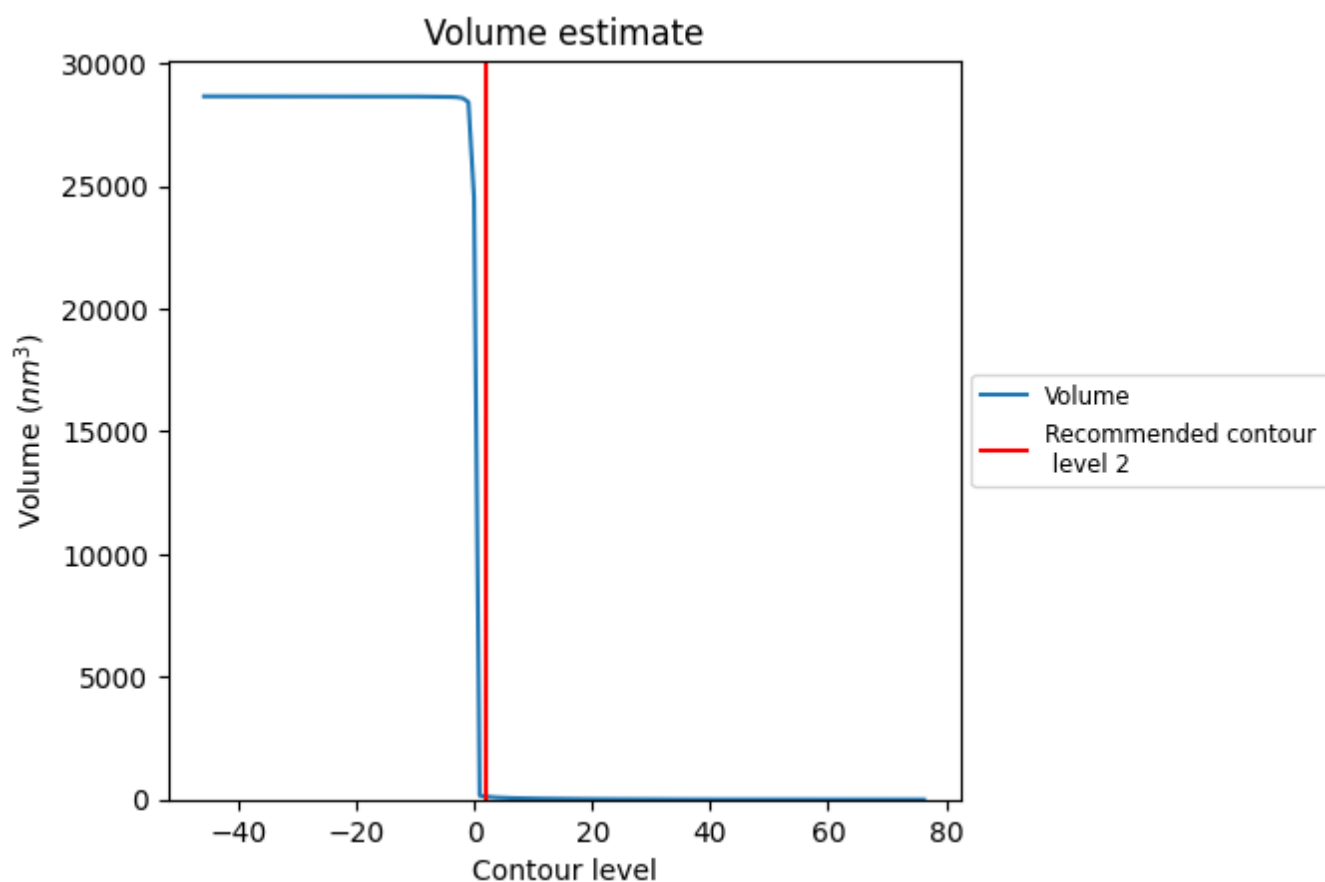
This section contains the results of statistical analysis of the map.

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.

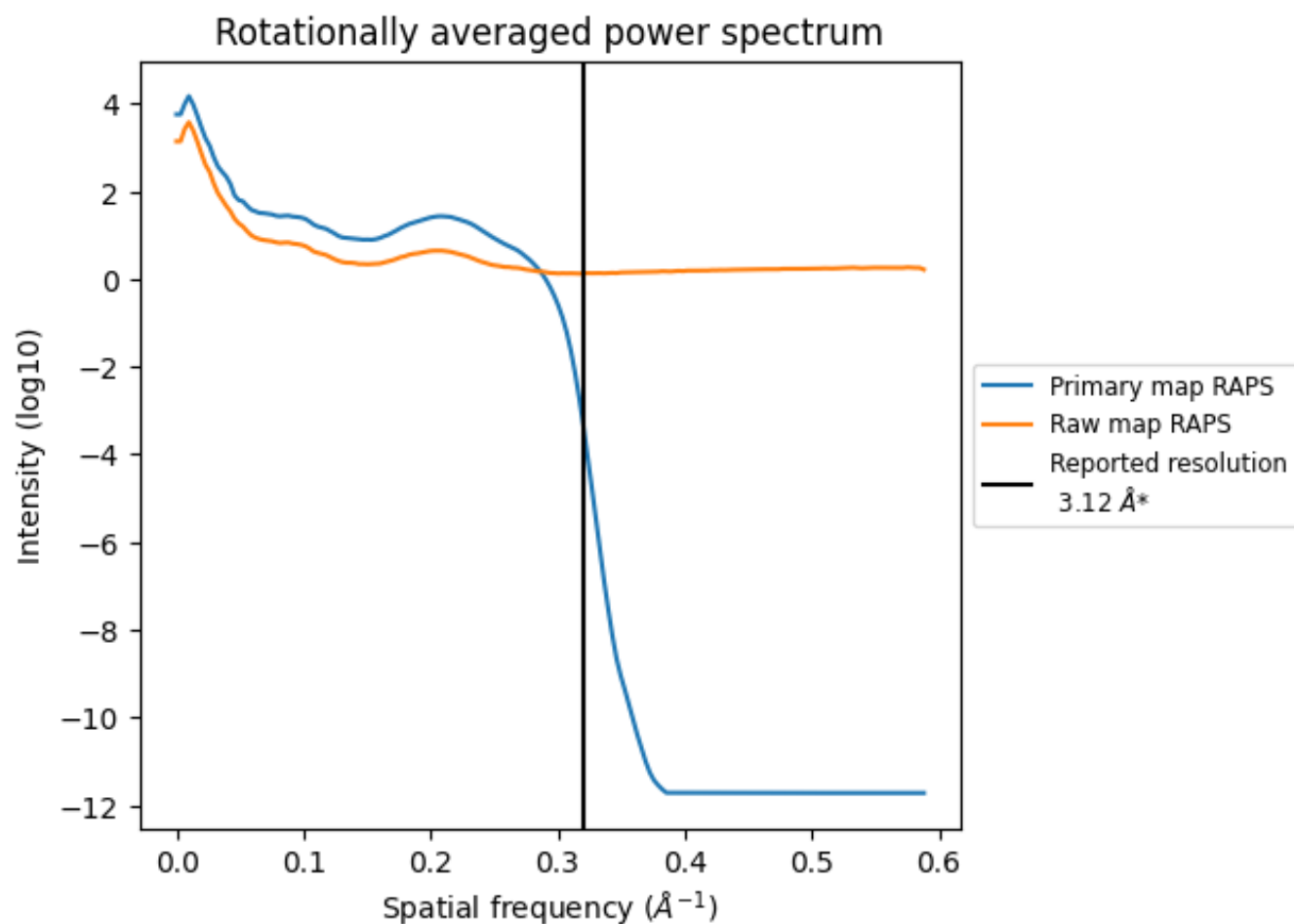
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 118 nm³; this corresponds to an approximate mass of 107 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 ⓘ

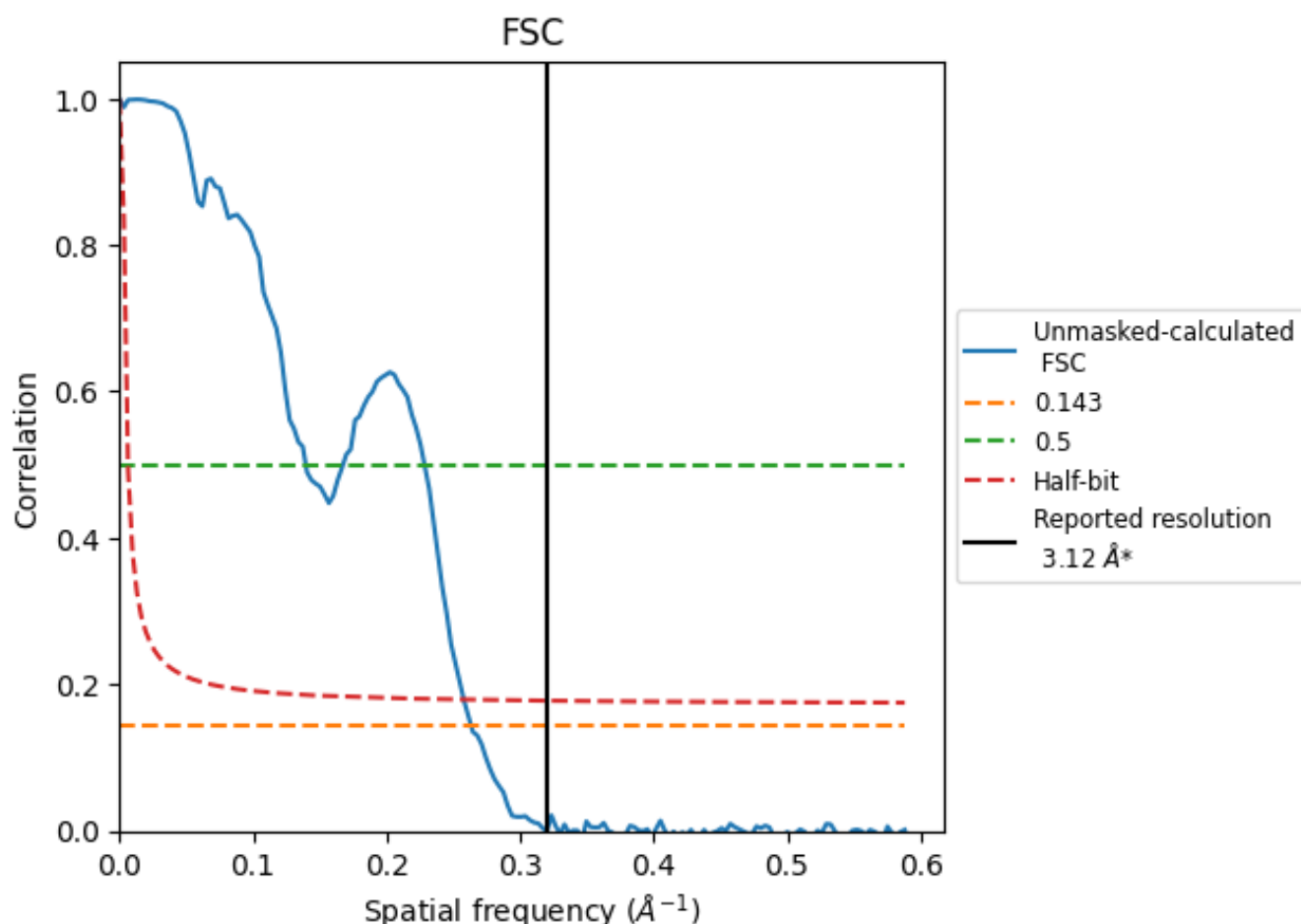


*Reported resolution corresponds to spatial frequency of 0.321 Å⁻¹

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 0.321 \AA^{-1}

8.2 Resolution estimates [i](#)

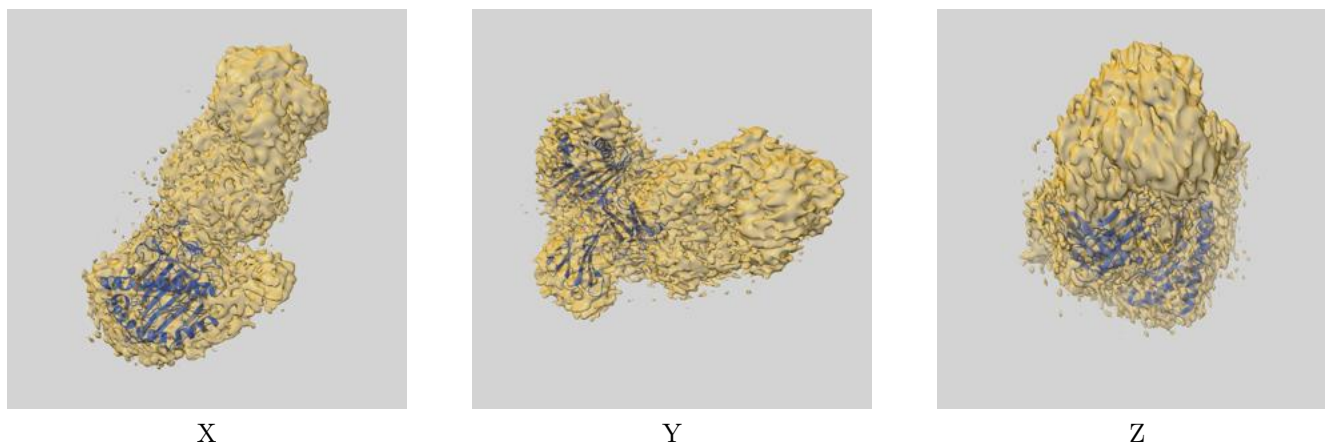
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.12	-	-
Author-provided FSC curve	-	-	-
Unmasked-calculated*	3.80	7.16	3.88

*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 3.80 differs from the reported value 3.12 by more than 10 %

9 Map-model fit [i](#)

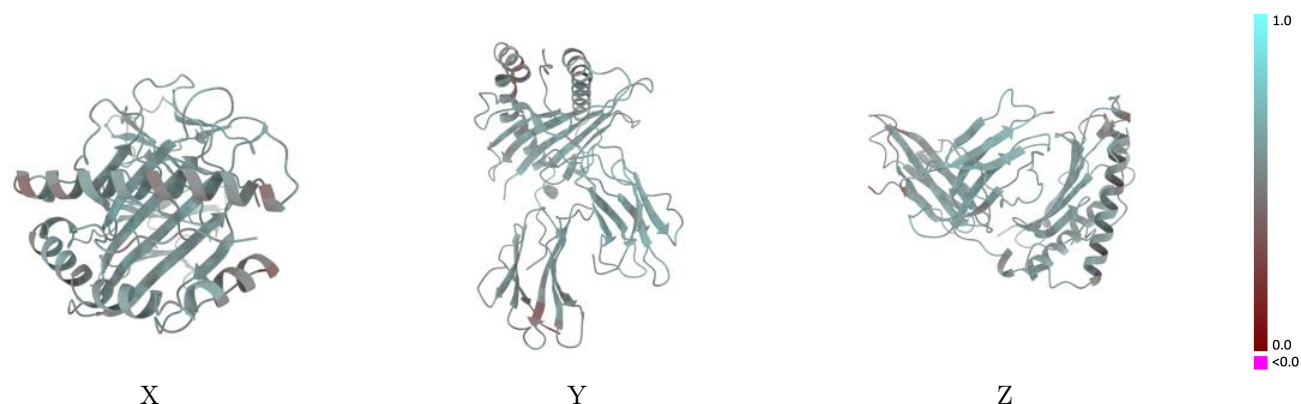
This section contains information regarding the fit between EMDB map EMD-28574 and PDB model 8ESB. Per-residue inclusion information can be found in [section 3](#) on [page 5](#).

9.1 Map-model overlay [i](#)



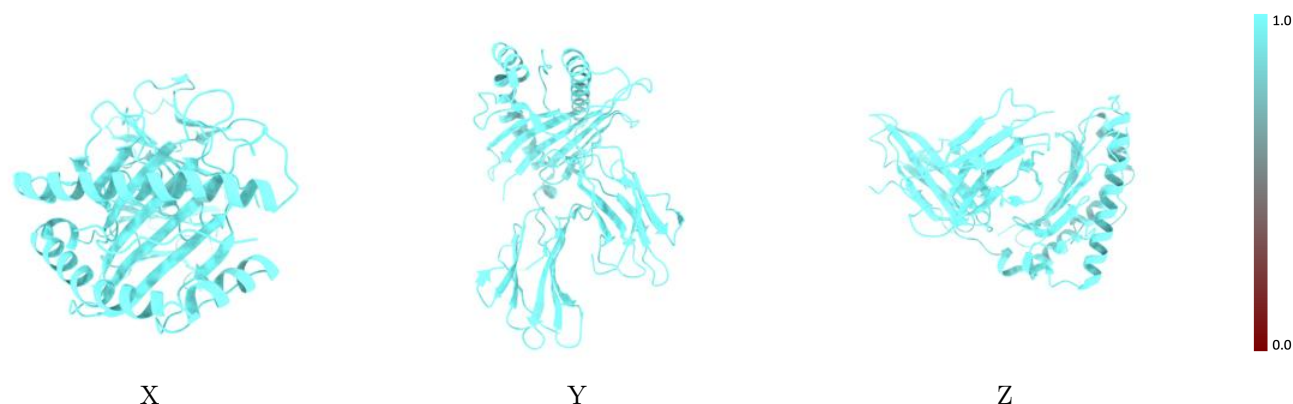
The images above show the 3D surface view of the map at the recommended contour level 2.0 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



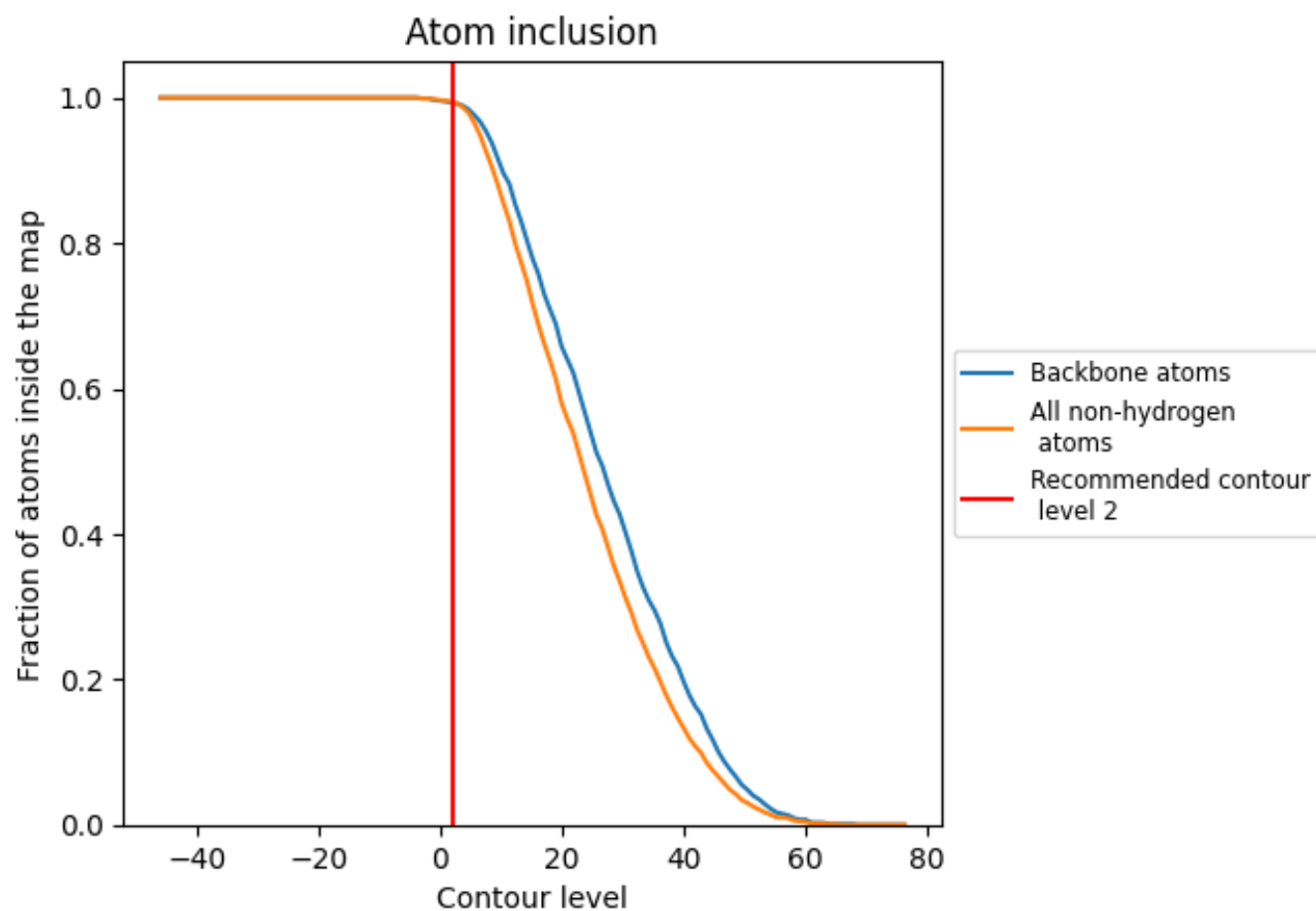
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (2).

9.4 Atom inclusion [i](#)



At the recommended contour level, 99% of all backbone atoms, 99% 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 (2) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	<div><div></div></div> 0.9940	<div><div></div></div> 0.5510
A	<div><div></div></div> 0.9940	<div><div></div></div> 0.5420
B	<div><div></div></div> 0.9960	<div><div></div></div> 0.5800
C	<div><div></div></div> 1.0000	<div><div></div></div> 0.5210

