



wwPDB EM Validation Summary Report ⓘ

Mar 7, 2026 – 02:47 AM UTC

PDB ID : 6OR6 / pdb_00006or6
EMDB ID : EMD-9033
Title : Full-length S. pombe Mdn1 in the presence of AMPPNP (tail region)
Authors : Chen, Z.; Suzuki, H.; Wang, A.C.; DiMaio, F.; Walz, T.; Kapoor, T.M.
Deposited on : 2019-04-29
Resolution : 5.30 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.dev132
MolProbity : 4-5-2 with Phenix2.0
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)
EM percentile statistics : 202505.v01 (Using data in the EMDB archive up until May 2025)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.49

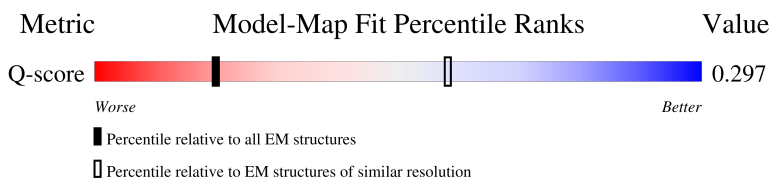
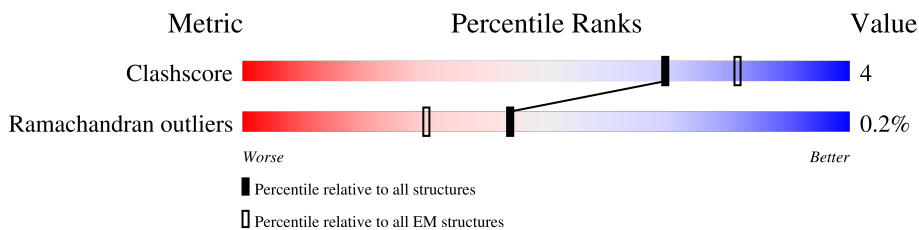
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 5.30 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)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	229148	23984	-
Ramachandran outliers	224038	23583	-
Q-score	-	25397	2407 (4.10 - 5.10)

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	4717	

2 Entry composition [i](#)

There is only 1 type of molecule in this entry. The entry contains 6293 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 Midasin.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
1	A	1264	6293	3765	1264	1264	0	0





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

4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	94649	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 ($e^-/\text{\AA}^2$)	88.8	Depositor
Minimum defocus (nm)	1400	Depositor
Maximum defocus (nm)	3000	Depositor
Magnification	22500	Depositor
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	0.161	Depositor
Minimum map value	-0.046	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.003	Depositor
Recommended contour level	0.039	Depositor
Map size (Å)	390.0, 390.0, 390.0	wwPDB
Map dimensions	300, 300, 300	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.3, 1.3, 1.3	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	0.47	0/6270	0.71	3/8725 (0.0%)

There are no bond length outliers.

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed($^{\circ}$)	Ideal($^{\circ}$)
1	A	3848	PHE	CA-C-N	5.24	126.30	120.06
1	A	3848	PHE	C-N-CA	5.24	126.30	120.06
1	A	3182	ILE	N-CA-C	-5.07	107.86	112.12

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	6293	0	2711	32	0
All	All	6293	0	2711	32	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 4.

The worst 5 of 32 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:2975:THR:O	1:A:2979:ALA:CB	2.36	0.74
1:A:2830:MET:O	1:A:2834:VAL:N	2.29	0.66
1:A:3303:SER:O	1:A:3307:ALA:HB2	1.95	0.66
1:A:2975:THR:O	1:A:2979:ALA:HB2	1.96	0.65
1:A:2589:GLY:O	1:A:2593:LEU:N	2.35	0.60

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	1218/4717 (26%)	1100 (90%)	116 (10%)	2 (0%)	43	77

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	3098	SER
1	A	3735	PRO

5.3.2 Protein sidechains [i](#)

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

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-9033. These allow visual inspection of the internal detail of the map and identification of artifacts.

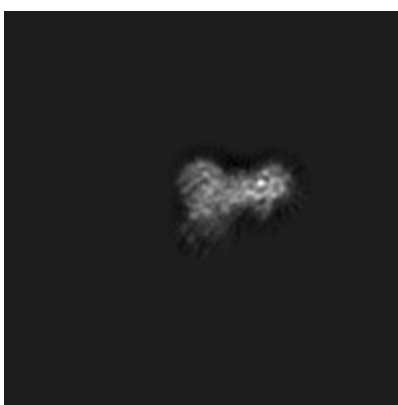
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections [i](#)

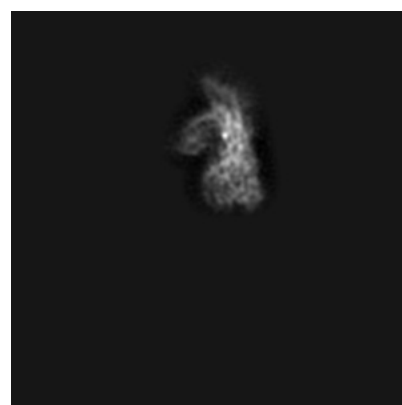
6.1.1 Primary map



X



Y

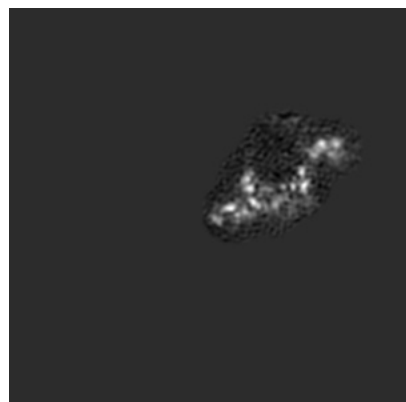


Z

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

6.2 Central slices [i](#)

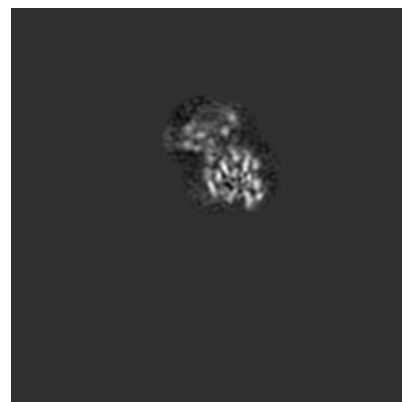
6.2.1 Primary map



X Index: 150



Y Index: 150



Z Index: 150

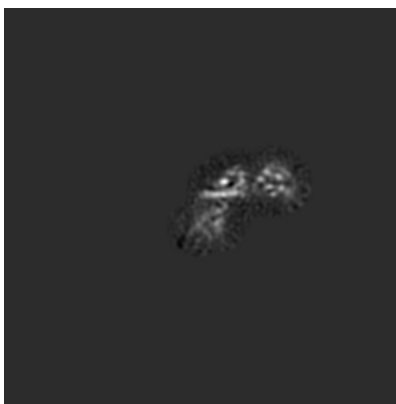
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

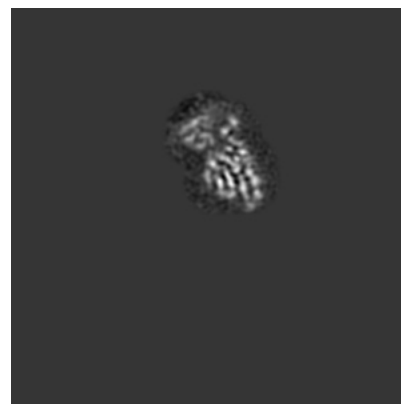
6.3.1 Primary map



X Index: 170



Y Index: 206

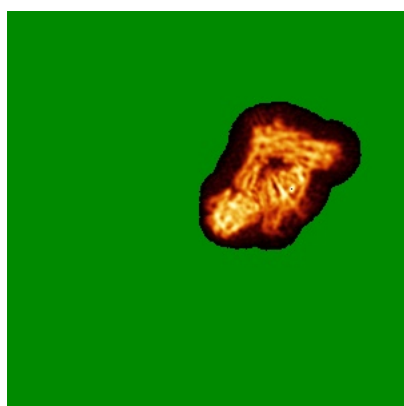


Z Index: 154

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

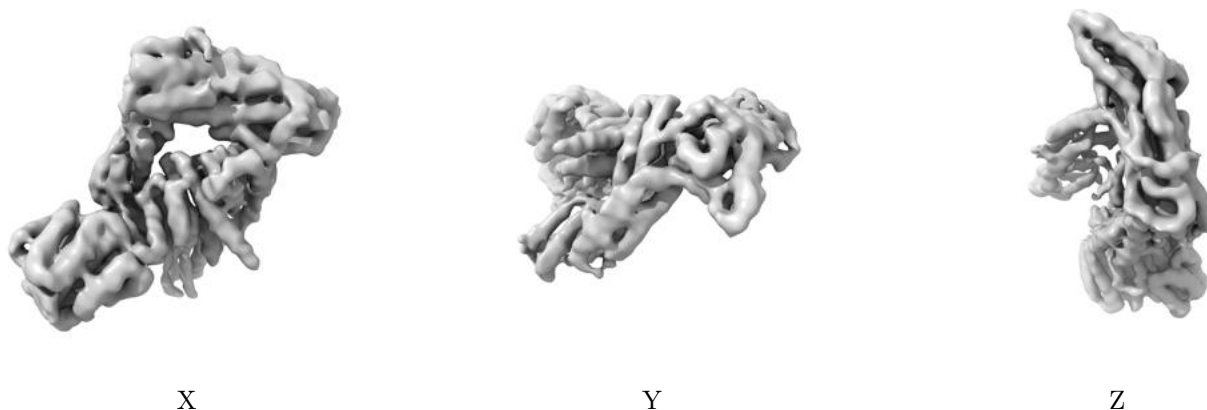


Z

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 0.039. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

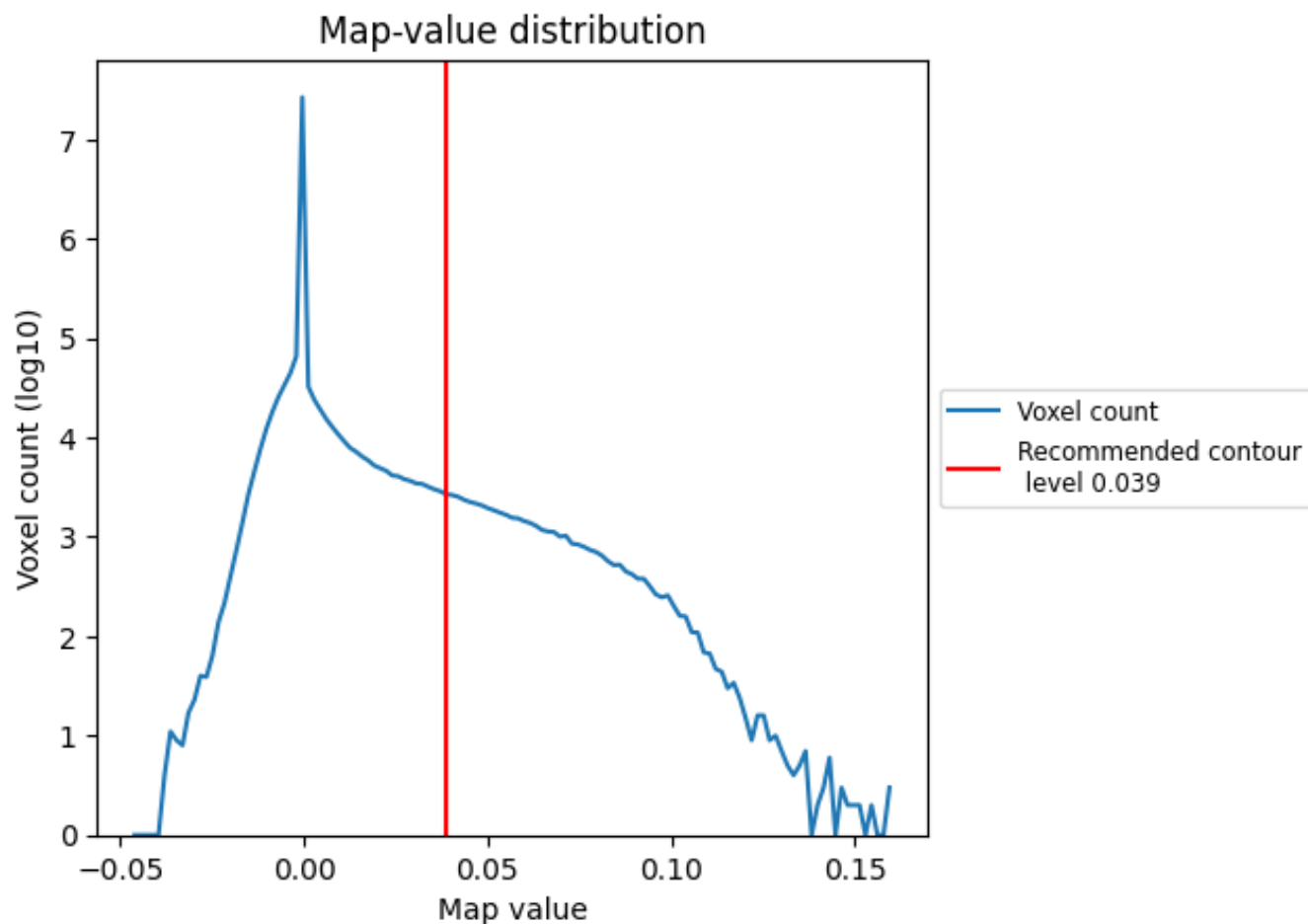
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

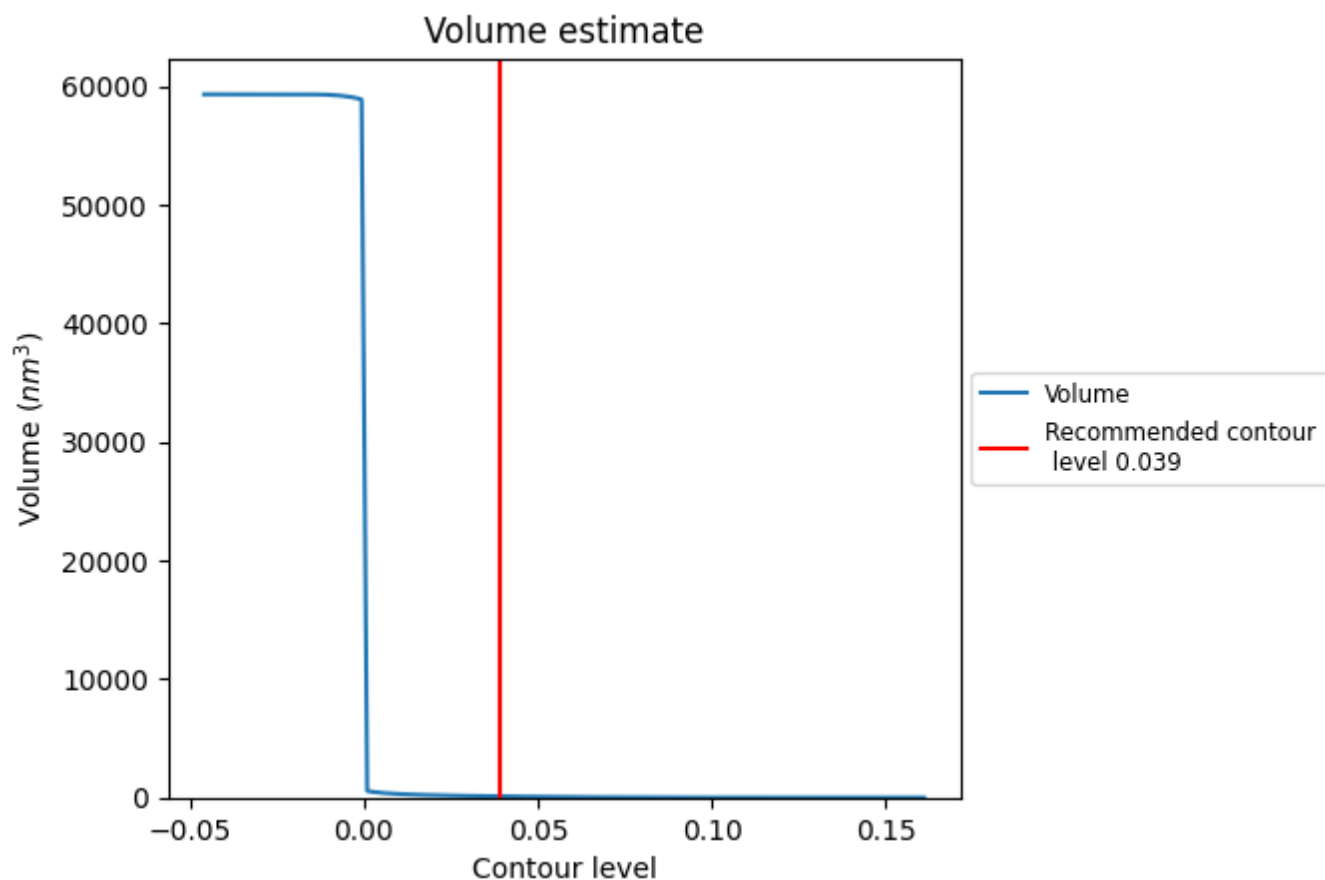
This section contains the results of statistical analysis of the map.

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.

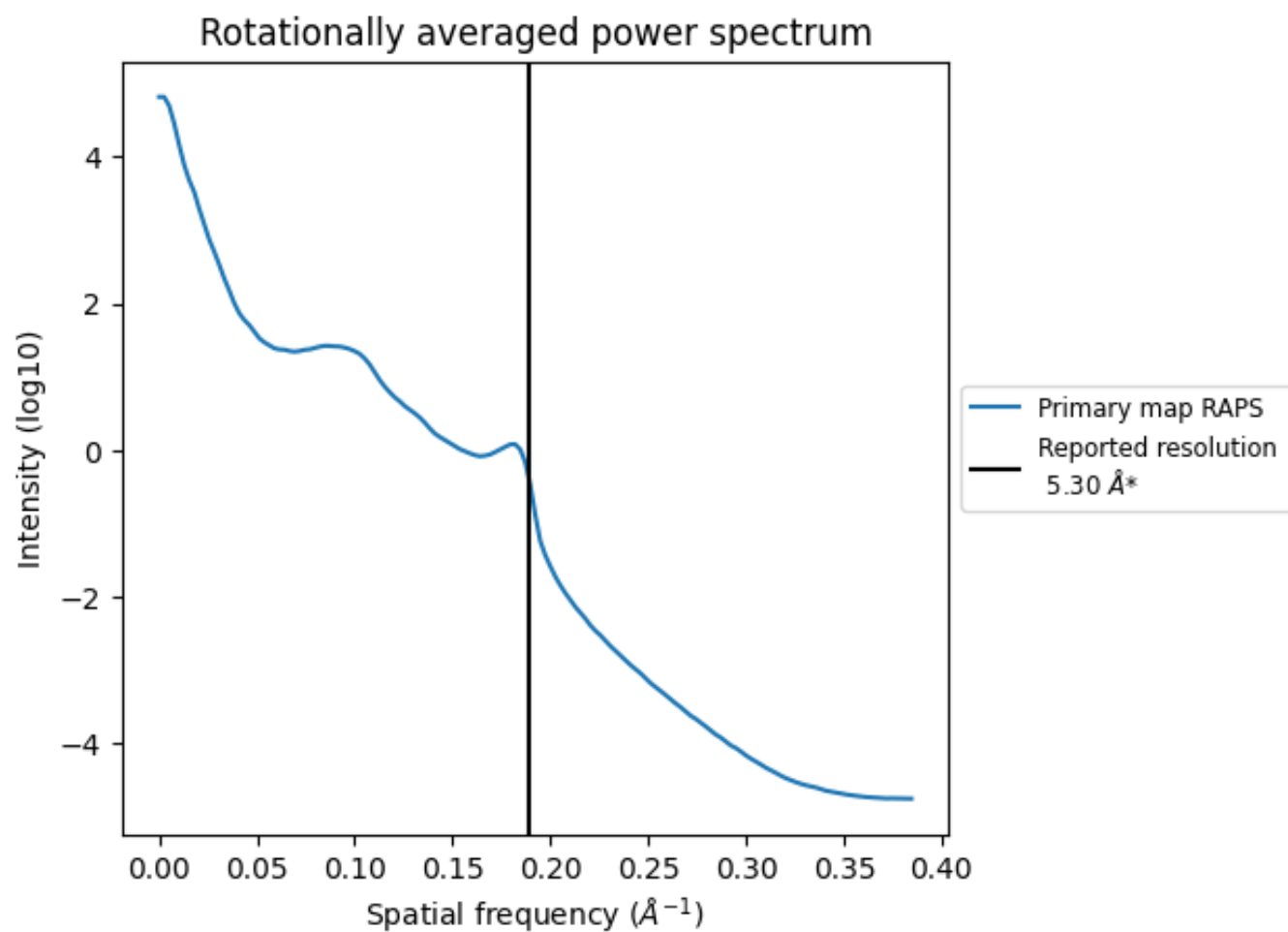
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 102 nm^3 ; this corresponds to an approximate mass of 92 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 ⓘ

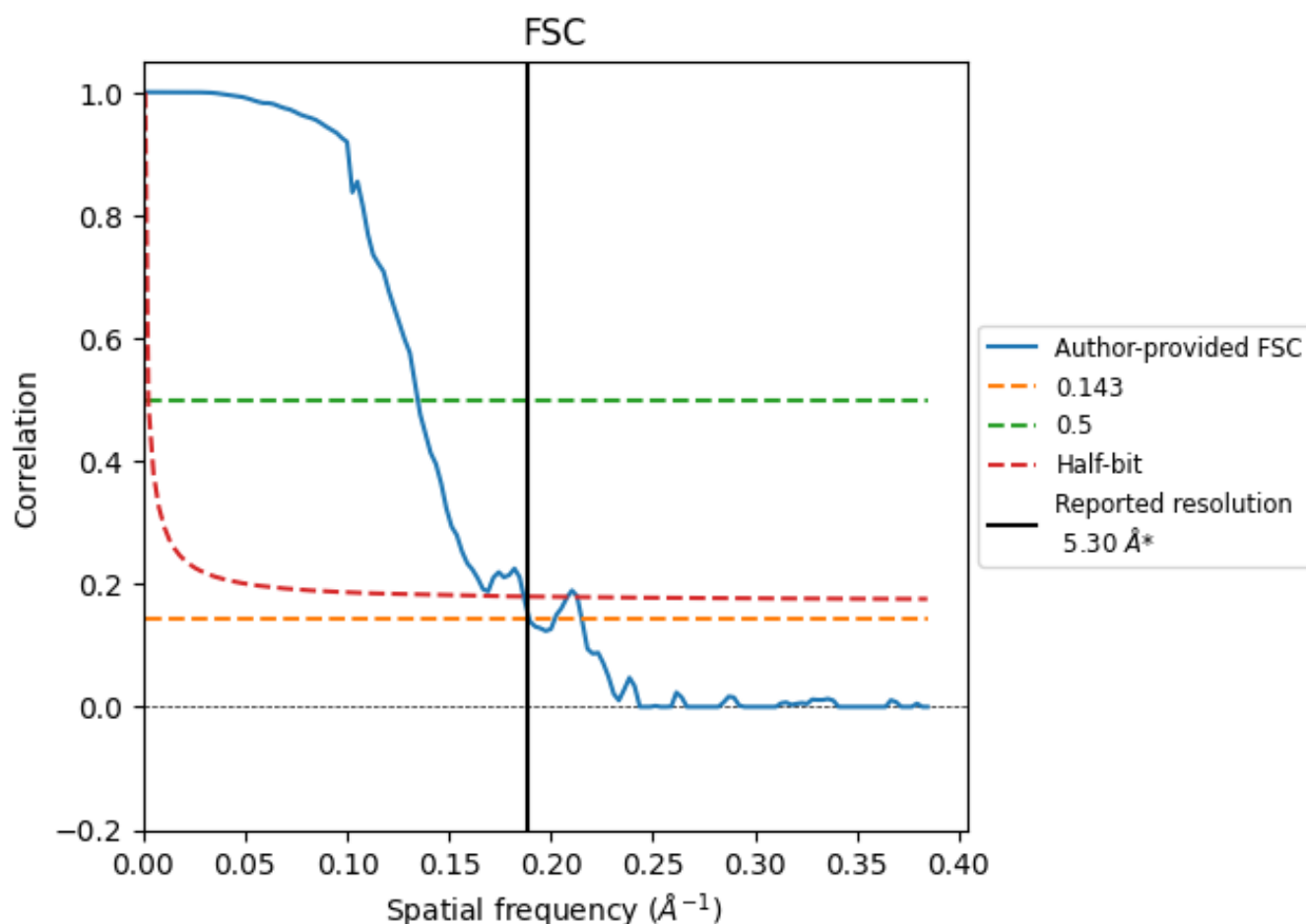


*Reported resolution corresponds to spatial frequency of 0.189 Å⁻¹

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 0.189 Å⁻¹

8.2 Resolution estimates [i](#)

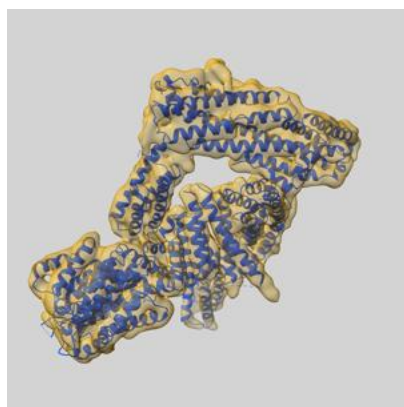
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	5.30	-	-
Author-provided FSC curve	5.28	7.42	5.36
Unmasked-calculated*	-	-	-

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps.

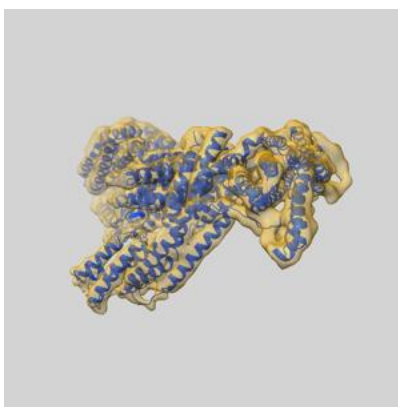
9 Map-model fit [i](#)

This section contains information regarding the fit between EMDB map EMD-9033 and PDB model 6OR6. Per-residue inclusion information can be found in [section 3](#) on [page 4](#).

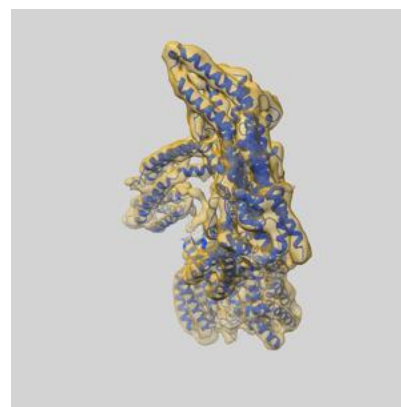
9.1 Map-model overlay [i](#)



X



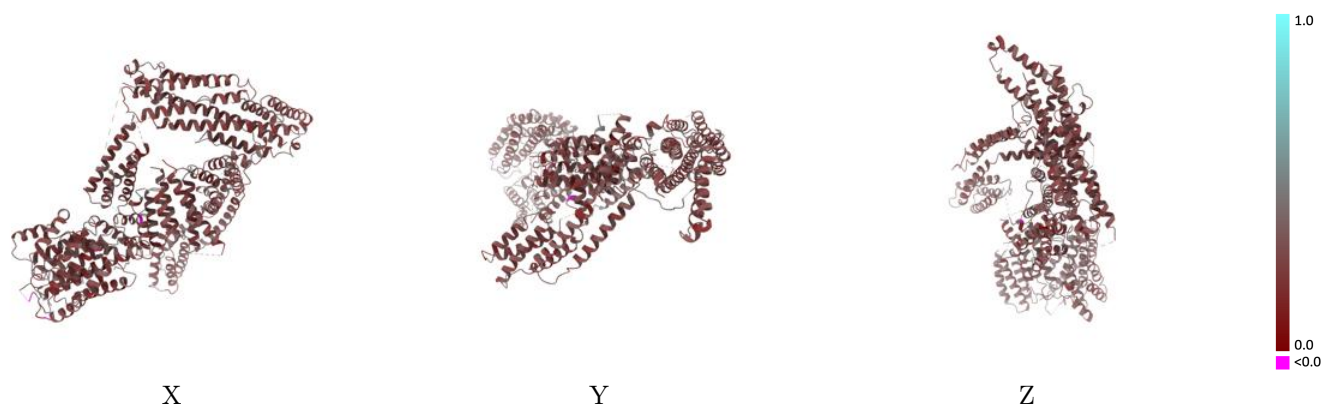
Y



Z

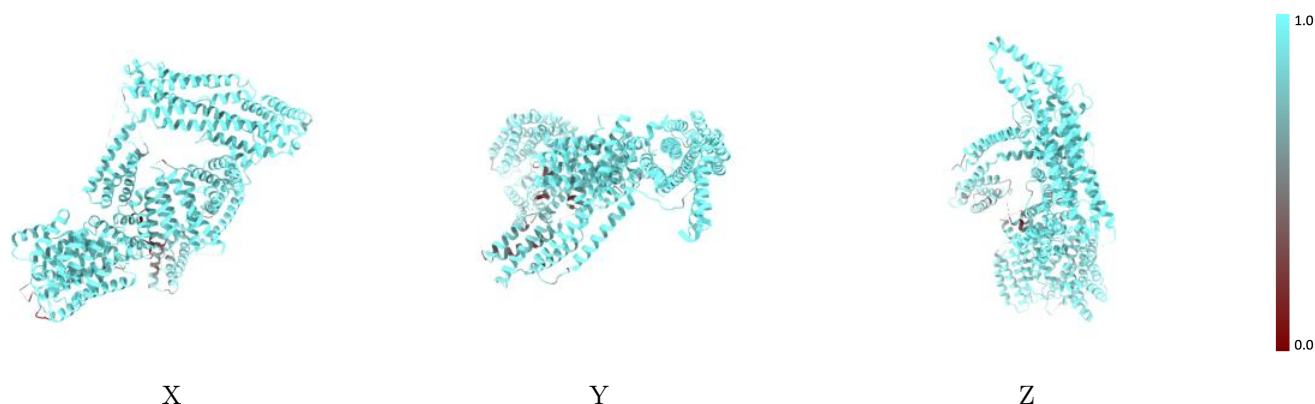
The images above show the 3D surface view of the map at the recommended contour level 0.039 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



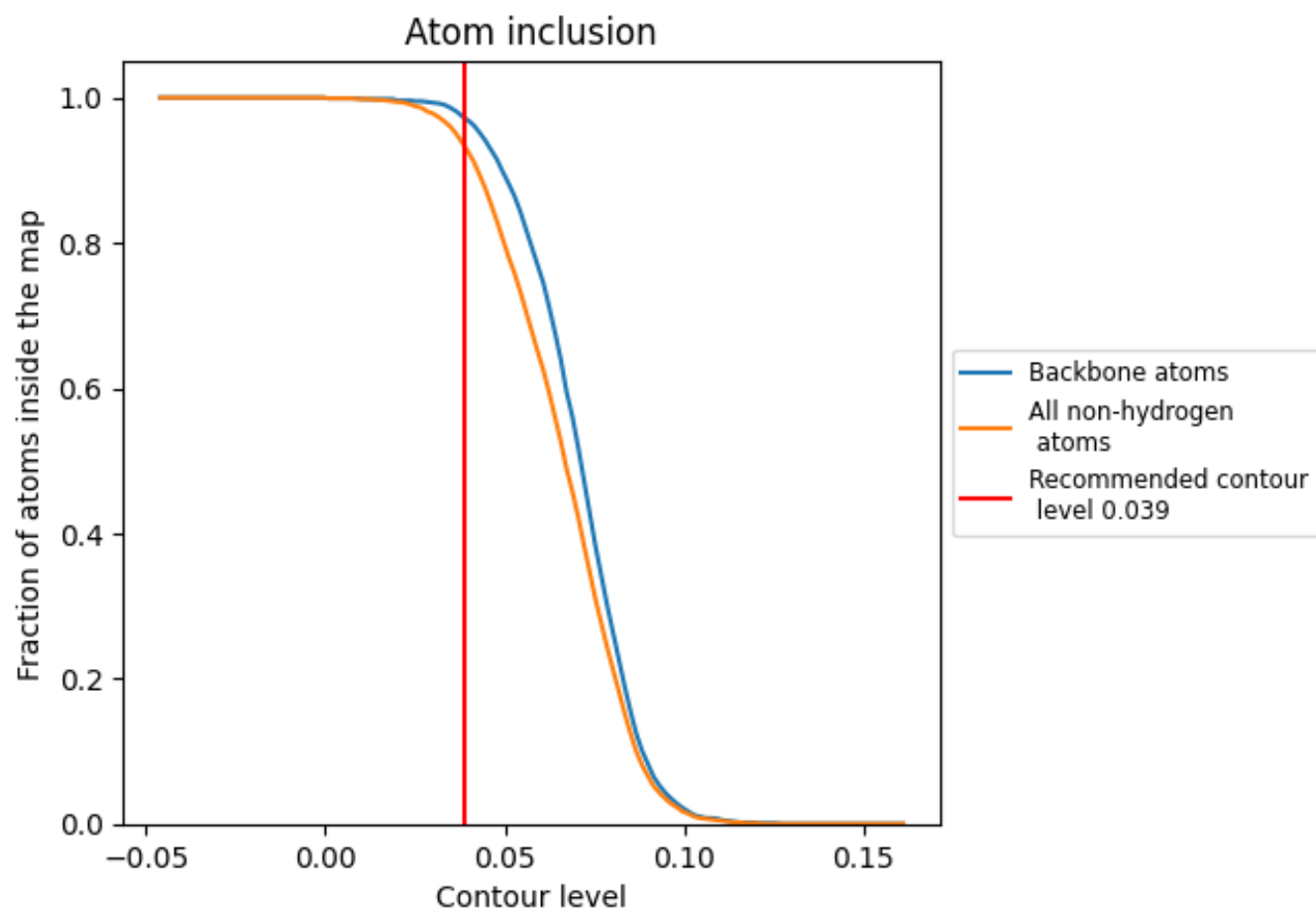
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.039).

9.4 Atom inclusion [i](#)



At the recommended contour level, 97% of all backbone atoms, 93% 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 (0.039) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.9310	0.2970
A	0.9310	0.2970

